W71

DEPARTMENT OF WATER
ENGINEERING DIVISION
SAN DIEGO, CALIFORNIA
Book _____ Mgd. Eng. _____
Book _____ Date _____

EUGENE DIETZGEN CO.

Drawing Materials and Surveying Instruments

NEW YORK. CHICAGO. SAN FRANCISCO.

TABLES FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 20 FEET WIDE. SIDE SLOPES 1 TO 1.

FOR SINGLE TRACK EXCAVATION.

Copyright, 1902. No. 39340.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	0
1	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11 7	11.8	11.9	1
2	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	2
3	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13 8	13.9	3
4	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	4
5	15.0	15.1	15 2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	5
6	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	6
7	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	7
8	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	8
9	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	9
10	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	10
11	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	11
12	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	12
13	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	13
14	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	14
15	25.0	25.1	25 2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	15
16	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	16
17	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	17
18	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	18
19	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	19
20	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	20
21	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	21
22	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	22
23	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	23
24	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	24
25	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	25
26	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	26
27	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37 8	37.9	27
28	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38 9	28
29	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39 9	29
30	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	30
31	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	31
32	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	32
33	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	33
34	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	34
35	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	35
36	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	36
37	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	37
38	48.0	48 1	48 2	48 3	48.4	48.5	48 6	48.7	48 8	48.9	38
39	49.0	49.1	49.2	49.3	49.4	49.5	49.6	49 7	49 8	49.9	39
40	50.0	50.1	50.2	50.3	50.4	50.5	50 6	50.7	50 8	50.9	40

Calculated by F. E. Paradis, C. E.

MICROFILMED
JAN X 6 1965

About 1915 A.D.

Index.

Potential Measurements

Car Line	Page.
No. 1 Route.	11-15-23-27-29-31.
" 2 "	11-13-15-25-27
" 3 "	27-29-31.
" 4 "	21-23.
" 5 "	11-17-15-19-21-23-27-29
" 6 "	15-17-19-21-23-27
" 7 "	11-21-23-29-25
" 8 "	17.
" 9 "	11-21-23-1
" 10 "	11-15-23-27-29-31.
National City Line	19-27-21-29-31.
Ocean Beach "	1-11-23-31

Ground Tests

District	Page
Bet. Bdway. & H. South, 4th to Artic.	25.
" 4th. & 2nd. South of Uni. Ave. to Upas	31.
" H st. & N. South of 15th to 8th	33.

Bond Tests.

E st. 25 to 16	35 to 41
H st. 25 to 16	47 to 49, 53-55
D st. 25 to 17	55 to 61
6th & Uni. Ave. to 5th & Robinson	87 to 91.

POTENTIAL SURVEY

LOCATION OF TEST	Pipe to Rail	Pipe to Earth	Pipe to Earth when Car Pulled	Pipe to Rail when Car Pulled	Notes.	Date	Time
Blvd & Chatsworth	-.3V	+.2V	+.3V	-2V		Apl 15	10:15 am
Blvd &	-.2V	+.2V	+.25V	-2V	2 Blocks E.	"	10:45 am
Blvd.	-.2V	+.1V	+.2V	-2.0V	1/3 E	"	11:30 am
Hancock & Wetherby	-.4V	+.2V	+.4V	-4V	200' E. of where Blvd. turns E.	"	11:15 am
Hancock & Wright	-2V	+.2V	+.3V	-4V		"	2:30 pm
Haraethy & Hancock	-4V	+.2V	+.3V	-5V		"	3:15 pm
Hamers & Conklin	-5V	+.2V	+.3V	-11V	East of Wetherby & La Jolla Ave.	Apl 16	9:30 am
La Jolla Ave & Bardini	-1.V	+.1V	+.2V	-3V		"	10:45 am
La Jolla & Hnasthy	-1.V	+.1V	+.15V	-2V	Ground Dry	"	11:45 am
India & Winder	-2.V	+.1V	+.2V	-5V	" "	"	1:15 pm
India & Upas	-1.V	+.2V	+.4V	-5V		"	1:45 pm
India & Redwood	-1.V	+.2V	+.3V	-5V	Ground dry	Apl 17	9:00 am
India & Palm	+.4V	+.2V	+.25V	-3V	" "	"	10:15 am
India & Nutmeg	-1.V	+.1V	+.2V	-5V		"	11 am
Newport & Bacon	-4V	+.1V	+.2V	-14V		" 22	11 am
Stat-							

LOCATION OF TEST	PIPE TO RAIL	PIPE TO EARTH	Pipe to Earth when CAR PULLED

Index (cont)

Bond Tests

From 1st. + Wash. to 2nd. + Robinson. ----- 93 to 105.
" M st to L st. on 5th. ------- 107-111-113
30th. st. from Uni. Ave to Lauret --- 119-to 133.

Drop Measurements Bet Services.

District Pages.
Bet. F + G south of 25 to 12th. ------ 45—51.
25th. st. ---------- 63 to 71.
Bet 1st + 6th south of Washington to Robinson --- 73-85.
5th. Bet M + K st. ---------- 109.
30th. st ---------- 115.
Fern st. ---------- 117.

Service Leak Investagations

5th. Bet. H + I ---------- 87
5th " E + F ---------- 117.
C st. " 14 + 15 ---------- 117.

Potential Measurements

To find Average difference Bet Pipe + Rail.

No 1 Line ----- 135—139—143—145—147.
30th. St. ---------- 135.
F st. ---------- 147.
Short Line ---------- 147.
(5th st. -- service Drop. ---------- 137)

NOTES

POTENTIAL

LOCATION OF TEST	PIPE TO RAIL	PIPE TO EARTH	Pipe to earth when Gr. Pulled

Index

No. 6 Line.

F Street
3rd. "
D "
1st. "

No. 7 Line.

B Street

No. 8 Line Old Town Line.

D Street.
State "
Ivy "
India "

No. 9 Line

D Street
5th. "
1st. "

No. 10 Line

Artic Street.
Rest same as No. 9.

Ocean Beach Line.

Same as Old Town Line to Winder st.

SURVEY

NOTES

Index

Ocean Beech Line (cont.) Pages.

Winder Street.
La Jolla Ave.
Hancock "
Pt. Loma Blvd
Voltair Street
Santa Cruze "

National City Car Line.

Grand Ave.
Newton. "
13th. Street
Same as K St. Line up to 13th.

POTENTIAL

LOCATION OF TEST	PIPE TO RAIL	PIPE TO EARTH	Pipe to Earth when Car Pulled

SURVEY

NOTES

POTENTIAL SURVEY

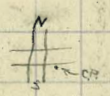
LOCATION OF TEST	PIPE TO RAIL	PIPE TO EARTH	Pipe to Earth when Car Pulled	Pipe to Rail when Car Pulled

NOTES

Measurement made at	Pipe to rail	P to R when car pulled	Pipe to Earth	P to E when car pulled	Date	Time	Notes
India & Juniper	-0.6 V	-0.3 V	+0.2 V	+0.25	May 8	10:30 am	
Columbia & Ivy	+0.4 V	-4.40 V	-0.2 V	+0.40	"	11:10 am	
State & Hawthorne	1.0 V	-2.0 V	+0.2 V	-0.2 V	"	1:30 pm	Measure Rail Joint at this point
State & Elm	+1.0 V	-2.0 V	+0.3 V	+0.3 V	"	2:00 "	
State & Ash	+.4 V	-.5 V	+0.3 V	+.4 V	"	2:30 "	
State & Bdway	+1.7 V	+2. V	+0.2 V	+.3 V	"	3:00 "	
State & E	+1.4 V	+2.3 V	+0.2 V	+.3 V	"	3:30 "	
State & G	+1.7 V	+2 V	+0.2 V	+0.3 V	"	4:00 "	
State & H	+1.9 V	+2.3 V	-0.3 V	-0.4 V	"	4:30 "	
H & 25	-4.0 V	-14.0 V	+0.4 V	0.45 V	May 9	10:00 AM	Dry Ground
H & 21	-9.0 V	-13.0 V	+0.3 V	+0.3 V	" "	11 " "	Dry Ground
H & 18	-9.0 V	-9.0 V	+0.2 V	+0.3 V	" "	11:30 "	Dry Ground
H+16	-2.2 V	-8.0 V	+0.2 V	+0.25 V	May 11	10.20 AM	Dry Ground
25+Bdway	-2.40 V	-4.8 V	+0.25 V	+0.2 V	" "	11.28 "	Damp Ground
25+E	-1.0 V	-4.6 V	+0.10 V	+0.15 V	" "	11.52 "	Dry Ground
25+F	-2.8 V	-5.0 V	+0.2 V	+0.2 V	" "	1.15 PM	" "
F+24	-2.4 V	-4.0 V	+0.15 V	-0.1 V	" "	1.30 "	" "
F+22	-1.6 V	-5.0 V	+0.18 V	-0.1 V	" "	2.00 "	" "
F+20	-2.2 V	-4.8 V	+0.2 V	-0.18 V	" "	2.30 "	" "
F+18	-2.4 V	-6.0 V	+0.2 V	+0.15 V	" "	2.55 "	" "
F+16	-1.0 V	-6.4 V	+0.1 V	-0.05	" "	3 15 "	" " Meter chamber
F+14	-2.7 V	-6.6 V	+0.25 V	-0.20	" "	4 15 "	" "

Potential Survey

Measurement Made at	Pipe to Rail	P to R when car pulled	Pipe to Earth	P to E when car pulled	Date	Time	Notes.
F+12	-0.4V	-8.0V	+0.15V	+0.10V	May. 12,	8.30 AM	Dry Ground.
F+10	-2.2V	-10.0V	+0.15V	+.20V	" "	9.45 AM	" "
F+8	-3.1V	-8.0V	+0.10V	+.20V	" "	10.00 "	" "
F+6	-1.0V	-4.2V	+0.20V	+.10V	" "	10.15 "	Damp Ground.
H+14	-2.4V	-5.2V	+0.25V	+.10V	" "	10.50 "	Dry Ground.
H+12	-1.8V	-6.4V	+0.15V	+.20V	" "	11.15 "	Dry Ground.
H+10	-1.4V	-8.2V	+0.15V	+.25V	" "	11.45 "	" "
H+8	-2.8V	-10.0V	+0.18V	+.20V	" "	1.15 "	" "
H+6	-2.2V	-4.0V	+0.15V	+.10V	" "	1.30 "	Damp Ground.
16+J	-1.8V	-4.2V	+0.20V	+.25V	" "	2.30 "	" "
16+L	-1.8V	-3.4V	+0.20V	+.18V	" "	3.00 "	Dry Ground.
16+M	-1.6V	-3.0V	+0.15V	+.18V	" "	3.30 "	" "
Logan + Sigsbee	-3.4V	-7.8V	+0.20V	+.10V	" "	4.00 "	" "
Logan + Crosby	-2.4V	-7.4V	+0.30V	+.25V	" "	4.30 "	Damp Ground.
Logan + Dewey	-6.2V	-9.0V	+0.25V	+.20V	May, 13	8.00 AM	Damp Ground
Logan + Samson	-5.8V	-8.2V	+0.2V	+.10V	" "	9.00 "	Dry Ground
Logan + 26	-2.0V	-7.8V	+0.2V	+.30V	" "	9.45 "	Damp Ground.
National + 27	-2.4V	-12.0V	+0.2V	+.10V	" "	10.15 "	Dry Ground
National + 29	-1.2V	-12.8V	+0.25V	+.10V	" "	11.00 "	" "
National + 31	-2.4V	-18.4V	+0.25	+.35V	" "	4.00 "	" " May 14th.



	Measurement Made at	Pipe to Rail	P to R When car Pulled	Pipe to Earth	P to E When car Pulled	Date	Time	Notes
F	G+15	X	X	+0.20 V	+.40	May, 13	11.30 A.M	Damp Ground } Same Block
F	G+15	X	X	+.20 V	+.30	" "	12.45 P.M	" " meter Box. }
F	G+16	X	X	+.25 V	+.40	" "	1.00 "	Wet Ground Hyd.
F								
	M+19	-2.2 V	-4.8 V	+.2 V	+.25	" "	2.30 "	Dry Ground (meter Box)
H	M+22	-2.4 V	-5.2 V	+.2 V	-.05	" "	3.00 "	" " Hyd.
H	M+25	-1.4 V	-4.6 V	+.05 V	-.5 V	" "	3.30 "	Dry Ground "
H	M+27	-2.2 V	-5.2 V	+.15 V	+.25	" "	4.15 "	Damp Ground (meter Box)
H	M+28	-2.0 V	-5.4 V	+.20 V	+.30	" "	4.45 "	Dry Ground Hyd.
H								
	M+29	-1.6 V	-4.0 V	+.20 V	+.15	May. 14	8.00 "	Dry Ground Hyd.
16	M+31	-2.2 V	-5.2 V	+.20 V	+.18	" "	9.00 "	" " "
16	M+33	-1.4 V	-3.8 V	+.30 V	-.05	" "	10.30 "	Damp Ground "
16	M+35	-1.6 V	-4.2 V	+.20 V	-.10	" "	11.00 "	" " (meter Box)
	M+36	-1.2 V	-6.8 V	+.18 V	+.45	" "	12.00 "	Dry Ground Hyd.
Lo	M+38	-1.4 V	-8.0 V	+.20	+.05	" "	1.00 PM.	Damp Ground. (meter Box).
Lo	M+40	-2.0 V	-9.4 V	-.20	-.60	" "	2.30 "	Dry Ground (meter Box)
	H+6 st.	-0.8 V	-3.2 V	-0.20 V	-.10	May, 15.	8.00 "	Damp Ground (meter Box)
Lo	H+2.	-1.0 V	-2.2 V	+0.20 V	+.35	" "	9.30 "	" " Hyd.
L	H+Front	+1.1 V	-0.8 V	-0.20	-.30	" "	10.20 "	Dry Ground Hyd.
L	H+Columbia st.	+1.6 V	+2.2 V	-0.25 V	-.40	" "	11.00 "	Damp Ground (meter Box)
M	H+Artic st.	+1.4 V	+2.1 V	-0.60 V	-.40	" "	12.15 "	" " (Meter Box)
M	H+Atlantic st.	+1.6 V	+3.2 V	-0.45 V	-.55	" "	1.15 PM	Damp Ground (Meter Box)
Na								

Potential Survey

Measurement Made at	Pipe to Rail	P to R when car Pulled	Pipe to Earth	P to R when Pu	E car Pulled	Date	Time	Notes
B+India st.	-0.6V	-2.2V	+0.2V	+0.2	5V	May, 15	2.15 P.M.	Damp Ground - Hyd.
B+State st.	-1.0V	-3.8V	+0.2V	+0.3V	0V	" "	3.30 " "	Dry Ground "
B+Front st.	-1.40V	-4.0V	+0.1V	+0.2	0V	" "	4.30 " "	Dry Ground "
B+2 st.	-1.40V	-2.40V	+0.1V	+0.2	0V	May, 16	8.00 "	Dry Ground "
B+4 st.	-1.20V	-2.60V	+0.2V	+0.4	0V	" "	9.30 "	" " "
B+6 st.	-1.60V	-3.40V	+0.2V	+0.1	5V	" "	10.30 "	Damp Ground "
B+8 st.	-1.40V	-6.00V	+0.2V	+0.0	5V	" "	11.45 "	Dry Ground (meter Box.)
B+10 st.	-1.40V	-5.80V	+0.18	+.1	0V	" "	12.30 "	Damp Ground (meter Box)
B+12 st.	-1.0V	-10.40V	+0.1V	-.5	5V	May, 18	8.00 A.M.	Dry Ground Hyd.
B+14 st.	-1.2V	-9.80V	+0.2V	+.1	0V	" "	9.30 " "	" " (meter Box)
K+5 st	-1.0V	-3.00V	-0.1V	-.2	0V	" "	10.45 " "	Damp Ground (Meter Box)
K+7 st	-1.4V	-3.60V	+0.1V	-.1	5V	" "	12.00 " "	Dry Ground. (Hyd.)
K+9 st	-1.4V	-3.80V	+0.1V	-.0	5V	" "	1.00 " PM	" " (Hyd.)
K+11 st	-1.6V	-4.00V	+0.18V	-.0	2V	" "	2.30 " "	Damp Ground (Meter Box).
K+13 st	-1.8V	-4.80V	-0.05V	+.0	5V	" "	3.30 " "	" " (")
K+15 st	-1.4V	-3.00V	+0.20V	+.1	5V	" "	4.15 " "	Dry Ground (")
K+17 st	-0.85V	-3.60V	+0.25V	+.10	V	" "	5.00 " "	" " (")
			+0.30V	+.18	V			
K+19 st	-1.40V	-7.20V	+0.30V	+.18	V	May, 19	8.30 A.M.	Damp Ground (meter Box)
K+21 st	-1.40V	-4.40V	+0.25V	+.15	V	" "	10.00 " "	Damp Ground (meter Box)
K+23 st	-1.40V	-4.40V	+0.18V	+.10	V	" "	11.45 " "	Dry Ground (")
K+25 st	-1.20V	-4.20V	+0.20V	+.10	V	" "	12.30 " "	Damp Ground (")
25+N st	-1.20V	-3.60V	+0.10V	+.20	V	" "	1.00 " "	Dry Ground Hyd

Potential

Measurement Made at	Pipe to Rail	PtoR when Car Pulled	Pipe to Earth	Pto when Pul.	E car led.
Woolman ~~Grant Ave~~ + EVANS	-0.80V	-4.20V	+0.20V	+0.16	V
28 + ~~Grant Ave.~~	-1.00V	-7.20V	+0.20V	-0.10	V
30 + ~~Grant Ave.~~	-1.00V	-9.40V	+0.20V	-0.10	V
Grand + 32	-4.00V	-16.00V	+0.25V	+0.10	V
Grand + 30	-1.20V	-12.00V	+0.10V	+0.20	V
Grand + 28	-2.60V	-14.00V	+0.20V	+0.25	V
Grand + 26	-2.40V	-8.40V	+0.25V	+0.05	V
Newton + 24	-1.80V	-5.40V	+0.25V	+0.20	V
Newton + Dewey	-1.40V	-7.20V	+0.20V	+0.10	V
Newton + Sigsbee	-2.40V	-6.40V	+0.40V	+0.20	V
M + 13	-1.80V	-3.40V	-0.30V	-0.40	V
L + 13	-2.40V	-3.60	+0.15V	-0.05	V
15 + K	-2.20V	X	+0.20V	X	
15 + L	-2.60V	X	+0.20V	X	
15 + M	-1.80V	-3.20V	+0.45V	+0.20	V
13 + M	-2.00V	-3.80V	+0.20	+0.05	V
11 + M	-2.40V	-4.40V	-0.15	-0.25	V
10 + L	-2.60V	-5.80V	-0.10V	+0.05	V
8 + N	from -4.00V to +0.20V	X	-0.20V	X	V
6 + N	-4.20V	X	-0.18V	X	
6 + K	-1.40V	-3.20V	-0.15V	-0.05V	
6 + H	-0.80V	-2.40V	+0.20V	-0.20V	

Survey

Date	Time	Notes.
May, 19	2.30 P.M.	Damp Ground (meter Box).
" "	3.30 "	Dry Ground (" ").
" "	4.30	Dry Ground (Hyd)
May, 20	8.30 AM.	" " (")
" "	10.00 "	" " (")
" "	12.00 "	" " (")
" "	1.30 "	Damp Ground (meter Box)
" "	3.00	Dry Ground (meter Box)
" "	4.30	Damp Ground (")
May. 21	8.30 AM.	Dry Ground (Hyd.)
" "	10.00.	" " (")
" "	12.00	" " (")
" "	1.00 P.M.	Damp Ground (meter Box)
" "	2.00 "	Dry Ground (meter Box).
" "	3.00 "	Damp Ground (Hyd)
" "	4.00	Dry Ground (meter Box).
" "	4.45	Damp Ground (Hyd)
May. 22	8.00	Dry Ground (Hyd).
" "	9.00	(Damp Ground) current unsteady (Hyd)
" "	10.00	Dry Ground current unsteady (Hyd).
" "	11.00	Dry Ground when cross car pulled (Hyd)
" "	12.00	Dry Ground when cross car pulled (Hyd)

Measurement Made at	Pipe to Rail	P to R when car pulled	Pipe to Earth	P to E when car pulled		Date	Time	Notes.
6 + F	-1.40V	-2.20V	X	X		May 22	1.00 A.M.	No Ground Test (Hyd)
6 + C	-0.80V	-1.80V	+0.30V	+0.35	V	" "	2.00 "	Damp Ground (Hyd)
4 + C	-1.20V	-2.00V	+0.20V	+0.18	V	" "	3.00 "	" " (")
C + 1	-0.80V	-1.80V	+0.25V	+0.13	V	" "	4.00 "	Dry Ground (")
C + India	+0.40V	-0.80V	-0.10V	-0.20	V	" "	4.45 "	Damp Ground (Meter Box)
3 + H	-1.40V	-3.40V	-0.18V	-0.20	V	May 23	8.00 A.M.	Damp Ground (Meter Box)
3 + F	-1.30V	-3.80V	-0.10V	-0.05	V	" "	9.00 "	Dry Ground (Hyd)
3 + Bdway	-0.80V	-1.40V	+0.80V	+0.90	V	" "	10.00	Damp Ground (")
3 + B	-1.20V	-2.20V	+0.20V	+0.10	V	" "	11.00	Dry Ground (Meter Box)
3 + Ash	-1.20V	-2.40V	+0.18V	+0.05	V	" "	12.00	Damp Ground (Meter Box)
3 + Cedar	-2.20V	-3.00V	+0.10V	-0.10	V	May 25	8.00 A.M.	Damp Ground (Hyd)
3 + Elm	-1.80V	-3.00V	+0.20V	+0.30	V	" "	9.00 "	" " (Meter Box)
4 + Grape	-1.20V	-5.40V	+0.20V	+0.15	V	" "	10.00 "	" " (")
4 + Hawthorne	-1.80V	-4.00V	+0.18V	+0.10	V	" "	11.30 "	" " (Hyd)
4 + Juniper	-1.40V	-5.80V	+0.15V	+0.05	V	" "	12.00 "	" " (Meter Box)
4 + Laurel	-1.20V	-3.60V	+0.20V	+0.05	V	" "	1.00 P.M.	Dry Ground (Hyd)
4 + Nutmeg	-2.00V	-5.00V	+0.20V	+0.10	V	" "	2.00 "	" " (Meter Box)
4 + Palm	-1.60V	-4.20V	+0.15V	+0.05	V	" "	3.15 "	" " (" ")
4 + Redwood	-2.40V	-6.60V	+0.20V	+0.10	V	" "	4.30 "	Damp " (" ")
Spruce + 3	-3.40V	-7.60V	+0.15V	-0.05	V	May 26	8.00 A.M.	Damp Ground (Meter Box)
Spruce + 1	-4.00V	-7.00V	+0.20V	-0.20	V	" "	9.00 "	" " (Hyd)
1 + Upas	-2.60V	-8.20V	+0.18V	-0.15	V	" "	10.30 "	" " (Meter Box)
1 + Brooks	-3.40V	-6.20V	+0.20V	+0.10	V	" "	12.00 "	Wet Ground (" ")

Potential Survey

Measurement Made at	Pipe to Rail	PtoR When car Pulled	Pipe to Earth	PtoE When car Pulled		Date	Time	Notes.	
1st + Penn. Ave.	-2.40 V	-4.20 V	+0.20 V	+0.18 V		May 26	1.00 P.M.	Wet Ground	(meter Box).
1st + University	-3.20 V	-6.40 V	+0.18 V	-0.05 V		" "	2.00 " "	Dry Ground	(" ")
Washington + Front	-3.00 V	-4.40 V	+0.20 V	+0.25 V		" "	3.30 " "	Damp Ground	(" ")
Washington + Brant	-2.40 V	-7.20 V	+0.25 V	+0.78 V		" "	4.30 " "	Wet Ground	(" ")
Washington + Eagle	-3.00 V	-7.00 V	+0.10 V	-0.05 V		May 27	8.00 A.M.	Dry Ground	(" ")
Washington + Goldfinch	-3.60 V	-6.40 V	+0.18 V	+0.25 V		" "	9.00 " "	Damp Ground	(Hyd)
Hawk + Getti	-2.20 V	-8.20 V	+0.20 V	-0.05 V		" "	10.30 " "	Dry Ground	(meter Box)
Lewis + Ibis	-2.60 V	-7.40 V	+0.20 V	+0.05 V		" "	12.00 " "	" "	(" ")
Lewis + Jackdaw	-3.80 V	-10.00 V	+0.18 V	+0.02 V		" "	1.00 " "	" "	(" ")
Lewis + Hooker	-6.20 V	-9.00 V				" "	2.00 " "		(" ")
Stockton D. + Trais	-4.00 V	-8.00 V	-0.30 V	-0.45 V		" "	2.45 " "	Damp Ground	(" ")
Stockton D. + Argvella	-3.00 V	-8.20 V	-0.10 V	-0.20 V		" "	3.45 " "	Dry Ground	(" ")
Stockton D + Hermosa	-2.60 V	-7.60 V	+0.10 V	-0.15 V		" "	4.30 " "	Damp Ground	(" ")
Lewis + Calhoun	-4.40 V	-8.20 V	+0.25 V	+0.10 V		" "	5.00 " "	Damp Ground	(" ")
1st + Bdway	+1.20 V	-0.20 V	+0.80 V	+1.00 V		May 28	6.00 A.M.	Dry Ground	(Meter Box)
1st + F	From +0.40 V to -0.60 V	-1.40 V	-0.10 V	+0.20 V		" "	9.30 " "	" "	(" ")
1st + H	From +0.50 to -0.60	-1.00 V	-0.25 V	-0.40 V		" "	10.00 " "	" "	(" ")
Artic + H	+2.20 V	-0.60 V	-0.60 V	-0.70 V		" "	11.00 " "	Damp Ground	(" ")
Artic + F	+2.00 V	+2.40 V	From +0.40 V to -0.45 V	-0.30 V		" "	11.30 " "	" "	(" ")
Artic + Bdway	+2.40 V	+3.40 V	From +0.80 to -1.80	-0.80 V		" "	12.00 " "	Dry Ground	(Hyd)
1st + C	-1.20 V	From +0.40 to -0.30	+0.20	+0.25 V		" "	1.00 P.M.	Damp Ground	(Meter Box)
1st + A	-0.80 V	-4.20 V	+0.18	+0.10 V		" "	2.00 " "	Dry Ground	(Hyd)
1st + Beech	From +0.10 V to -0.40 V	From +0.40 V to -5.60	+0.15	+0.05 V		" "	3.00 " "	Dry Ground	(Meter Box)

Potential Survey

Measurement Made at	Pipe to Rail	P to R When car Pulled	Pipe to Earth	P to E When car Pulled	Date	Time	Notes
1st + Date	From +0.20 to -0.40	-5.20V	+0.15V	+0.05 V	May 28	4.00 P.M.	Dry Ground (Meter Box)
1st + Fir	-1.20 V	-18.00V	+0.20V	+0.08V	May 29	8.00 A.M.	Damp Ground (" ")
1st + Hawthorn	-1.40 V	-16.00V	+0.40V	+0.10V	" "	9.00 " "	" " " (" ")
1st + Ivy	-0.60V	-16.00V	+0.20V	+0.10 V	" "	10.00 " "	" " " (" ")
1st + Laurel	-1.60V	-19.00V	+0.20V	+0.05 V	" "	11.00 " "	" " (Hyd)

Ground Tests

District = Between Bdway + H sts. South of 4th to Artic st.

1st + E	X	X	+0.40	X	May 29	1.00 P.M.	Damp Ground	(Meter Box)
Columbia + Bdway	X	X	-0.25	Cross St. Pull -0.10	" "	2.00 " "	" "	(" ")
Columbia + G	X	X	From +0.05 to -0.20	X	" "	2.30 " "	" "	(" ")
Columbia + H	X	X	+0.40	Cross St. Pull +0.30	" "	3.00 " "	" "	(" ")
India + G	X	X	-0.20	Cross St. Pull -0.15	" "	3.30 " "	" "	(" ")
India Bet. E + F	X	X	+2.00	X	" "	4.00 " "	Ind. of new service Trs. " "	(" ")
India Bet E + Bdway	X	X	-0.50	Cross St. pull -0.60	" "	4.30 " "	" "	(" ")
5 + B	-4.20V	-5.40V	+0.40V	+0.30V	June 1.	8.00 AM.	Damp Ground	(Meter Box)
5 + Date	-4.40V	-6.00V	+0.15V	+0.05V	" "	9.00 " "	Dry Ground	(" ")
5 + Kalmia	-5.50V	-6.20V	+0.20V	+0.18V	" "	10.00 " "	Damp Ground	(" ")
5 + Upas	-4.40V	-5.40V	+0.15V	+0.03V	" "	11.00 " "	Wet Ground	(" ")
5 + University	-5.20V	-9.20V	+0.30V	+0.20V	" "	12.00 " "	" "	(" ")
University + 8th	-5.40V	-7.40V	+0.25V	+0.20V	" "	1.00 " "	Damp Ground	(" ")
University + Bidline Ave.	-4.40V	-6.60V	+0.20V	+0.05V	" "	2.00 " "	Dry Ground	(" ")
University Bldg	-5.20V	-7.40V	+0.20V	+0.25V	" "	3.00 " "	" "	(" ")
University + Campus	-4.80	-7.60V	+0.20V	+0.15V	" "	4.30 " "	" "	(" ")

Potential

Measurement Made at	Pipe to Rail	P to R When car Pulled	Pipe to Earth	P to E When car Pulled
6 + M	-0.40V	X	+0.10V	X
5 + J	-4.20V	-8.00V	+0.10V	-0.05V
5 + H	-4.40V	-6.20V	+0.15V	-0.01V
5 + F	-3.00V	-4.40V	+0.25V	+0.05V
5 + D	-2.60V	-4.60V	+0.26V	+0.10V
University + 30	-2.20V	-4.00V	From +0.07V to -0.40V	-0.20V
University + Oregon	-1.60V	-6.20V	-0.20V	-0.05V
University + Texas	-2.25V	-5.50V	+0.15V	+0.05V
University + Alabama	-3.70V	-7.00V	From +0.15V to -0.10V	-0.30V
University + Park Blvd.	-5.60V	-8.40V	+0.20V	+0.05V
University Blvd + Park Blvd.	-6.65V	-10.00V	+0.30V	+0.15V
University Blvd +	-7.40V	-16.00V	+0.20V	+0.08V
Park Blvd. + Monroe	-3.00V	-10.00V	From +0.15V to -0.15V	+0.20V
Park Blvd. + Spalding P.	-2.00V	-7.45V	+0.15V	+0.05V
Adams + Georgia	-1.00V	-3.20V	+0.15V	+0.25V
Adams + Idaho	-1.65V	-6.30V	+0.10V	-0.20V
Adams + Boundary	-1.40V	-4.45V	+0.10V	+0.20V
University + Albatross	-2.70V	-6.20V	-0.20V	-0.05V
University + Illinois	-1.40V	-4.40V	-0.15V	+0.05V
30th + University	-2.20V	-3.70V	-0.20V	-0.04V
30th + Capps	-3.00V	-4.60V	+0.14V	+0.04V
30th + Ups	-3.40V	-8.00V	-0.20V	+0.10V
30th + Thorne	-4.00V	-7.65V	-0.10V	+0.05V

Survey

Date	Time	Notes.	
June 2	6.00 A.M.	Dry Ground	(Hyd.)
" "	6.45 " "	Damp Ground	(Meter Box)
" "	7.30 " "	" "	(" ")
" "	8.15 " "	Wet Ground	(" ")
" "	9.00 " "	Damp Ground	(" ")
" "	10.00 " "	Wet Ground	(" ")
" "	11.30 " "	Dry Ground	(" ")
" "	2.30 P.M.	Damp Ground	(" ")
" "	3.30 " "	Dry Ground	(" ")
" "	4.30 " "	Damp Ground	(" ")
June 3rd.	8.00 AM	Damp Ground	(Hyd.)
" "	9.00 " "	" "	(Meter Box).
" "	10.00 " "	" "	(" ")
" "	11.00 " "	" "	(" ")
" "	1.00 PM	Damp Ground	(Hyd)
" "	2.45 " "	" "	(Meter Box)
" "	4.00 " "	" "	(" ")
June 4th	8.00 A.M.	Damp Ground	(" ")
" "	9.00 " "	" "	(" ")
" "	10.00 " "	" "	(" ")
" "	11.00 " "	" "	(" ")
" "	2.00 PM	" "	(" ")
" "	3.00 " "	Wet "	(" ")

Potential Survey

Measurement	Pipe to Rail	PtoR When car Pulled	Pipe to Earth	PtoE When car Pulled	Date	Time	Notes	
30th + Palm	-4.20v	-8.20v	+0.15v	+0.05v	June 4	4.00 P.M.	Damp Ground	(meter Box)
30th + Kalmia	-6.00v	-10.60v	+0.20v	+0.10v	" "	5.30 " "	" "	(" ")
					" "			
30th + Ivy	-5.20v	-11.00v	-0.20v	+0.05v	June 5	8.00 A.M.	Dry Ground	(" ")
30th + Grape	-6.45v	-10.70v	+0.20v	+0.10v	" "	9.00 " "	Damp "	(" ")
30th + Date	-2.80v	-8.40v	+0.15v	+0.00v	" "	10.00 " "	Dry Ground	(" ")
Beech + Dalle	-3.40v	-7.70v	+0.20v	+0.10v	" "	11.00 " "	Damp Ground	(" ")
28th + Beech	-3.00v	-8.20v	+0.20v	+0.15v	" "	12.00 " "	Damp Ground	(" ")
16th + Bdway.	-4.10v	-7.50v	+0.10v	+0.05v	" "	3.00 P.M.	" "	(" ")
18th + Bdway.	-3.25v	-7.00v	+0.25	+0.10v	" "	4.00 " "	" "	(Hyd)
20th + Bdway.	-4.60v	-6.60v	+0.15v	+0.08v	" "	5.00 " "	" "	(Hyd)
22th + Bdway.	-4.80v	-8.00v	+0.20v	+0.03v	" "	6.00 " "	" "	(Meter Box)
Bdway + 24th.	-2.40v	-7.45v	+0.10v	-0.05v	June 6	8.00 A.M.	Dry Ground	(Hyd.)
25th + C st.	-4.60v	-7.00v	+0.18v	+0.05v	" "	9.00 " "	Damp Ground	(Meter Box)
B + 27st	-4.70v	-6.70v	+0.20v	+0.00v	" "	10.00 " "	" "	(" ")
28 + A	-4.00	-6.20v	+0.20v	+0.05v	" "	11.30 " "	" "	(" ")
Bdway + 5th	-2.30v	-3.20v	+0.20v	+0.05v	June 8	6.30 A.M.	Damp Ground	(" ")
Bdway + 7th	-2.10v	-3.70v	+0.35v	+0.40v	" "	7.30 " "	" "	(" ")
Bdway + 10th	-2.40v	-5.30v	+0.15v	+0.05v	" "	8.30 " "	" "	(" ")
Bdway + 12th	-2.20v	-6.20v	+0.10v	-0.10v	" "	9.30 " "	" "	C.J. Toilet in hole by Track (Hyd.)
Bdway + 14th	-2.30v	-6.50v	+0.20v	+0.15v	" "	10.30 " "	" "	(Meter Box)
Bdway + 3rd	-0.80v	From +1.40v to -0.40v	+0.80	+1.00v	" "	2.00 P.M.	" "	(Hyd.)
Bdway + Front	-1.80v	From -1.90v to +0.40v	+0.30	+0.20v	" "	3.00 " "	" "	(")

Potential

measurement made at	Pipe to Rail	P to R When Car Pulled	Pipe to Earth	P to E When Car Pulled
Bdway + Columbia	+4.00V	+4.65V	+0.20V	+0.10V
Bdway + Calif.	+4.80V	+6.05V	-0.80V	-0.45V
Voltaire + Cable st.	-0.45V	-10.00V	+0.30V	-0.20V
Voltaire + Eber	-0.20V	-9.50V	+0.20V	-0.05V
Voltaire + Balinas (This side Defroe)	-2.40V	-7.20V	+0.25V	-0.40V
Voltaire + San Clemente	-0.40V	-4.00V	+0.20V	-0.10V
Santa Crus + Cable	-0.40V	-12.00V	+0.30V	-0.10V
Santa Crus + End of P.L.	-0.40V	-10.00V	+0.25V	-0.05V
S.D.E. Ry. + Bet. McCawley + Narragansett	-0.35V	-9.00V	+0.25V	+0.03V
McCawley + Evergreen	-0.40V	-10.00V	+0.20V	+0.05V
Pt. Loma Blvd. + Russell	-1.60V	-6.45V	+0.30V	+0.10V
Pt. Loma Blvd. + Souch	-1.20V	-8.00V	+0.40V	+0.60V
Pt. Loma Blvd. + Goldsmith	-1.40V	-7.60V	+0.20V	-0.20V

Ground

4th + Upas	X	X	+0.15V	Next Block +0.25V
4th. Bet. Walnut + Brooks.	X	X	From +0.30V to +0.25V	X
4th. + Penn. Ave.	X	X	From +0.20V to +0.18V	X
4th. + Robinson.	X	X	No Fluctuation +0.20V	X
4th + University	X	X	From +0.28V +0.05V	X
3rd. + "	X	X	From +0.20V to +0.10V	X
3rd. + Penn. Ave.	X	X	From +0.30V to +0.20V	X
3rd. + Brooks	X	X	From +0.30V to +0.25V	X
3rd + Walnut	X	X	From +0.30V to +0.40V	X
3rd + Upas	X	X	From +0.38V to +0.25V	X

Survey

Date	Time	Notes	
June 8th	4.00 P.M.	Damp Ground	(Hyd.)
" "	5.00 " "	Damp Ground	(Hyd)
June 9th	10.30 A.M.	" "	(Meter Box)
" "	1.00 P.M.	Damp Ground	(" ")
" "	3.00 " "	" "	(Hyd)
" "	4.30 " "	" "	(Meter Box)
June 10th	9.30 A.M.	Dry Ground	(" ").
" "	11.30 " "	" "	(Dead End)
" "	1230 " "	" "	(Pipe Line)
" "	2.00 " "	" "	(" ")
" "	3.00 " "	" "	(Meter Box)
" "	4.00 " "	Damp Ground	(" ")
" "	5.00 " "	Dry Ground	(Hyd)

Tests

June 11	8.00 A.M.	Damp Ground	(Meter Box)
" "	9.00 " "	Wet "	(" ")
" "	10.00 " "	Damp "	(" ")
" "	11.00 " "	" "	(" ")
" "	12.00 " "	" "	(" ")
" "	12.30 P.M.	" "	(" ")
" "	1.45 P.M.	" "	(" ")
" "	2.30 " "	" "	(" ")
" "	3.30 " "	" "	(" ")
" "	4.15 " "	" "	(" ")

Potential

Measurement Made at	Pipe to Rail	PtoR When Car Pulled	Pipe to Earth	PtoE When Car Pulled
15th. + H st.	X	X	From +0.25V to +0.30V	X
15th + I st.	X	X	From +0.18V to +0.10V	X
15th. + J st.	X	X	From +0.45V to +0.25V	X
14th + K st.	X	X	From +0.30V to +0.20V	X
14th. + H st.	X	X	From +0.20V to +0.10V	X
13th + H st	X	X	From +0.20V to +0.05V	X
13th + J st.	X	X	From +0.20V to +0.15V	X
13th + K st.	X	X	From +0.25V to +0.10V	X
12th + J st.	X	X	From +0.20V to +0.15V	X
12th + H st.	X	X	+0.20V	X
11th. + I st	X	X	+0.20V	X
11th. + J st.	X	X	From +0.20V to +0.18V	X
10th. + I st.	X	X	From +0.20V to +0.15V	X
10th. + J st.	X	X	From +0.20V to +0.20V	X
10th + K st.	X	X	From +0.20V to +0.15V	X
9th + M st	X	X	From +0.10V to +0.10V	X
10th + Bet M + N sts.	X	X	From +0.25V to −0.05V	X
11th + N. st.	X	X	From +0.25V to +0.18V	X
8th + M st	X	X	From +0.15V to +0.10V	X
11th. + L st	X	X	From +0.20V to +0.05V	X

Survey

Date	Time	Notes	
June 12	8.00 A.M.	Damp Ground	(Meter Box)
" "	8.40 " "	" "	(" ")
" "	9.20 " "	" "	(" ")
" "	10.00 " "	" "	(" ")
" "	10.40 "	" "	(" ")
" "	11.30 "	" "	(" ")
" "	12.30 P.M.	" "	(" ")
" "	1.30 "	Dry Ground.	(" ")
" "	2.30 "	Damp Ground.	(" ")
" "	3.30	" "	(" ")
" "	4.30	" "	(" ")
" "	5.15	" "	(" ")
June 13	8.00 A.M.	Damp Ground	(" ")
June "	9.00 " "	" "	(" ")
" "	9.45 " "	" "	(" ")
" "	10.30 " "	Dry Ground	(Hyd).
" "	11.15 " "	Damp " From of Power House inhole	(Faucet).
" "	12.00 " "	Dry Ground	(Hyd).
June 15	9.00 " "	Dry Ground	(Hyd)
" "	10.00 " "	" "	(Meter Box)

Potential Measurement Made

		Rail Joint	3 Feet Rail
Ft 25 st.	1	+ 0.3 MV	+ 0.25 MV.
	2	From + 0.1.5 MV to − 0.25 MV	+ 0.10 MV − 0.20 MV
	3	From + 0.45 MV to − 0.40 MV	+ 0.10 MV. − 0.20 MV.
	4	From + 0.30 MV to − 0.40 MV	+ 0.30 MV − 0.10 MV.
	5	From + 0.10 MV to − 0.30 MV	+ 0.30 MV. − 0.25 MV.
	6	From + 0.40 MV. to − 0.50 MV	+ 0.10 MV. − 0.20 MV.
	7	From + 0.35 MV to − 0.40 MV	
	8	From + 6.0 MV to − 2.0 MV.	+ 1.0 MV. − 3.0 MV.
	9	From + 7.0 MV. to − 2.0 MV.	+ 1.0 MV. − 2.0 MV. ✓
	10	From + 7.5 MV. to − 3.5 MV.	+ 2.0 MV. − 2.5 MV.
	11	From + 1.0 MV to − 3.5 MV.	+ 1.0 MV. − 2.0 MV.
	12	From + 17.0 MV. to − 2.5 MV.	+ 1.0 MV. − 2.0 MV. ✓
	13	From + 3.5 MV. to − 3.5 MV.	+ 3.0 MV. + 2.0 MV.
	14	From + 4.0 MV. to − 2.0 MV.	+ 0.5 MV. − 1.5 MV. ✓
	15	+ 5.0 MV − 3.0 MV	+ 2.0 MV − 1.0 MV ✓
	16	From + 1.0 MV. to − 3.0 MV.	+ 2.0 MV − 2.0 MV.
	17	From + 6.0 MV to − 3.0 MV	+ 2.0 MV − 1.0 MV ✓
	18	+ 4.5 MV − 2.0 MV	+ 2.0 MV − 1.5 MV. ✓
	19	+ 1.5 MV. − 1.5 MV.	+ 1.0 MV. − 1.0 MV.
	20	+ 7.5 MV − 2.0 MV.	+ 3.5 MV. − 1.5 MV. ✓
	21	− 2.5 MV	− 0.5 MV + 0.5 MV.
	22	− 2.5 MV	− 0.5 MV.
Ft 24	1	+ 4.5 MV − 1.5 MV.	+ 1.0 MV. − 0.5 MV. ✓
	2	+ 4.5 MV. − 1.5 MV.	+ 3.0 MV − 1.5 MV.
	3	− 2.5 MV	− 1.0 MV.

Survey

Date	Time	Notes
June, 15	4.30 P.M.	From 2nd. Joint west of corner.
" "	4.40 " "	Rail length 30 Ft.
" "	4.50 " "	Wt. per yd. 70 Lbs.
" "		
June 16	8.00 A.M.	
" "	9.30 A.M.	First Joint west corner.

Potential

Measurement Made	at.	Rail Joint	3 Feet Rail	computations
F+24	4	−2.5 MV	−1.0 MV	
		+2.5 MV	+1.0 MV	
	5	−2.5 MV	−0.5 MV	✓
		+1.5 MV	+2.5 MV	
	6	−3.5 MV	−1.0 MV	
		+7.0 MV	+2.5 MV	
	7	−1.0 MV	−0.5 MV	✓
F+23	1	−2.0 MV	−1.5 MV	
	2	−2.5 MV	−1.5 MV	
			+1.0 MV	
	3	−3.5 MV	−0.5 MV	✓
	4	−2.5 MV	−1.5 MV	
		+3.5 MV		
	5	−2.5 MV	+2.5 MV	✓
	6	−3.0 MV	−1.0 MV	✓
		+0.5 MV		
	7	−2.5 MV	−1.0 MV	
	8	−2.5 MV	−1.0 MV	
		+7.0 MV	+2.5 MV	
	9	−2.5 MV	−1.0 MV	✓
F+22	1	−2.5 MV	−1.0 MV	
		+3.0 MV	+1.0 MV	
	2	−3.0 MV	−1.0 MV	✓
		+4.5 MV	+2.0 MV	
	3	−1.5 MV	−0.5 MV	✓
	4	−3.0 MV	−0.5 MV	✓
	5	−2.5 MV	−1.0 MV	
			+0.5 MV	
	6	−3.0 MV	−0.5 MV	
		+4.5 MV	+2.0 MV	✓
	7	−2.0 MV	−1.0 MV	
			+0.5 MV	
	8	−2.0 MV	−0.5 MV	
		+12.0 MV	+3.5 MV	
F+21	1	−1.5 MV	−1.0 MV	✓
		+1.0 MV	+0.5 MV	
	2	−3.0 MV	−1.5 MV	
		+1.5 MV	+2.0 MV	
	3	−2.0 MV	−1.0 MV	✓
		+1.0 MV		
	4	−3.5 MV	−1.5 MV	

Survey

Date	Time	Notes
June 16,	10.00 AM	
	10.30 AM.	First joint west of corner
	11.00 AM.	First joint west of corner
	11.30 AM.	First Joint west of corner

Potential

		Rail Joint	3 Feet of Rail	Computations
F+21	5	+1.5 MV. -2.5 MV.	-2.5 MV.	
	6	+5.0 MV. -1.5 MV.	+2.0 MV -1.0 MV	✓
	7	-2.5 MV.	-1.0 MV	
	8	+4.5 MV -1.5 MV	+0.5 MV -1.5 MV	✓
	10	-2.5 MV	+0.5 MV 1.5 MV	
F+20	1	+1.0 MV -3.0 MV	+0.5 MV. -1.0 MV.	
	2	+5.0 MV -3.0 MV.	-3.0 MV.	✓
	3	+1.0 MV. -2.5 MV.	+0.5 MV -0.5 MV	
	4	+2.5 MV. -1.5 MV.	+1.5 MV -0.5 MV.	
	5	+6.0 MV -4.0 MV	+3.5 MV -3.0 MV	✓
	6	+1.0 MV. -3.0 MV	+0.5 MV -1.0 MV	
	7	-7.0 MV.	-2.5 MV	✓
	8	-2.0 MV +1.5 MV	-0.5 MV	
	9	-1.0 MV	+1.0 MV	
	10	-3.0 MV	-2.0 MV.	
F+19	1	+1.0 MV -1.5 MV	-0.5 MV +0.5 MV	
	2	-2.0 MV.	-0.5 MV	
	3	+2.0 MV -3.0 MV	+1.0 MV	✓
	4	+5.0 MV -2.0 MV	+2.0 MV -1.0 MV	✓
	6	+10.0 MV -1.0 M	+2.5 MV -1.5 MV	✓
	7	-4.5 MV	-2.0 MV	✓
	8	+0.5 MV -1.5 MV	-0.5 MV	
	9	+1.0 MV +1.5 MV	+0.5 MV -0.5 MV	
F+18	1	+12.0 MV -1.5 MV	+4.0 MV -1.0 MV	✓
	2	-3.0 MV	-1.5 MV	

Survey

Date	Time	Notes
June 16	12.00 AM.	
	1.00 PM	
	1.30 PM	at Corner
	2.00 PM	First Joint West of Corner
	2.30 PM	First Joint west of Corner

Potential Drop on Rails

Measurement made	at	Rail Joint	3 Feet of Rail	Computations
F+18	3	+2.0 MV -4.0 MV	-1.5 MV.	✓
	4	+0.5 MV -1.5 MV	-0.5 MV	
	5	+0.5 MV -2.0 MV	+0.5 MV -0.5 MV	
	6	+2.0 MV -3.0 MV	+0.5 MV -1.0 MV	✓
	7	+1.0 MV -3.0 MV	+1.0 MV -2.0 MV	
	8	+1.0 MV -3.5 MV	+0.5 MV -2.0 MV	
	9	+0.5 MV -2.0 MV	+2.0 MV -1.0 MV	
F+17	1	+1.0 MV -3.0 MV	+0.5 MV -1.0 MV	
	2	+2.0 MV -5.0 MV	+0.5 MV -2.5 MV	✓
	3	+1.5 MV -1.0 MV	-1.0 MV	
	4	+3.0 MV -4.0 MV	+4.5 MV -1.0 MV	
	5	+1.0 MV -2.0 MV	+0.5 MV -1.5 MV	
	6	+6.5 MV -2.0 MV	+1.0 MV -2.5 MV	✓
	7	+1.0 MV -1.5 MV	+0.5 MV -1.0 MV	
	8	+4.5 MV -3.0 MV	+1.0 MV -2.5 MV	✓
	9	+1.0 MV -1.5 MV	+0.5 MV -1.0 MV	
	10	+1.5 MV -3.0 MV	-1.5 MV	
	11	+1.0 MV -5.0 MV	+1.0 MV -2.5 MV	

Survey

Date	Time	Notes
June 16	3.00 P.M.	
	4.00 P.M.	

Potential

Measurement Made at	Maximum (2 minute readings)	Minimum	Average Readings	
Bet. 25 + 24, Fst.	-4.4 MV	+0.4 MV		
25 + F	-5.0 MV	+1.2 MV		
Bet. 25 + 24, Fst.	-3.6 MV	+0.4 MV		
Bet. 22 + 23, Fst.	-2.0 MV	+0.15 MV		Had to cross st.
Fst. Bet. 21 + 20	+8.8 MV	+1.4 MV		
Fst. Across 19th st.	-6.8 MV	+0.8 MV		
Fst. Across 17th st.	-5.8 MV	+1.4 MV		
Fst. + 16th st.	-30.0 MV	-5.0 MV		
Fst. Bet. 14 + 15 sts.	-40.0 MV	-15.0 MV		
Hst. Bet. 13 + 12	+16.0 MV	+6. MV		
Hst. Bet. 14 + 13	+4.6 MV	+0.2 MV		
Hst. Bet. 15 + 14	+120.0 MV	+20.0 MV		
Hst. Bet. 16 + 15	+112.0 MV	+8.0 MV		
Hst. Bet. 17 + 16	+47.0 MV	+13.0 MV		
Hst. Bet. 17 + 18	+5.6 MV	-5.4 MV		
Hst. Bet. 18 + 19	+8.0 MV	+1.4 MV		
Hst. Bet. 19 + 20	+0.6 MV	+0.2 MV		
Hst. Bet. 21 + 22	+27.0 MV	-2.0 MV		
Hst. Bet. 22 + 23	-26.0 MV	+48.0 MV		
Hst. Bet. 24 + 25	+1.8 MV +7.4 MV	+0.05 MV +1.6 MV		Trouble Dist

Survey

Date	Time	Notes.
June 17.	10.30 AM	Meter Boxes for 3345 + 2439 House nos.
" "	12.00 AM.	First two service boxes north of corner
	1.00 P.M.	Meter Boxes for 3345 + 2439 House nos
	1.30 "	Meter Boxes for 3140 + 2240 House Nos
	2.00 "	Meter Boxes for 770 + 2031 House Nos.
	2.25 "	From Hyd. to Meter Box on corner.
	3.00 "	" " " " " " "
	4.00 "	From regulating chamber to Meter Box.
	4.30 "	Meter Boxes for 1454 + 1841 House Nos.
June, 18.	6.00 AM	Meter Boxes for 1219 + 1225 H. Nos.
	6.30 "	Meter Boxes for 1326 + 1341 H. nos.
	10.00 "	Meter Boxes for 1427 + 1417 H. nos.
	10.30 "	Meter Boxes for 1519 and Fire Hyd.
	11.00 "	Meter Boxes for School + Machine shop.
	1.00 P.M.	" " " 1727 + 567 17 st.
	2.00 "	" " " 1837 + 1821 H. Nos.
	3.00 "	" " " 1915 + 1931 H. Nos.
	4.00 "	" " " Church + 2120 H. Nos.
	4.45 "	" " " 2245 H. No.
	5.00 "	" " " 2445 + 2451 H. Nos.

Potential Measurement of service drops

Measurement Made at	Maximum	Minimum	Direction of current
G Bet. 12+13 st	+85.0 MV	+35.0 MV	West
G Bet 13+14 st	+8.2 MV	+2.8 MV	"
G Bet 14+15 st	+50.0 MV	+17.0 MV	West.
G+16 st.	+92.0 MV	+20.0 MV	West.
G+17 st	+2.4 MV	+0.6 MV	West
G Bet. 17+18	+15.0 MV	+7.0 MV	West
G+19.	-7.0 MV	+5.0 MV	E+W
G+20.	-4.0 MV	+3.0 MV	E+W
G Bet. 21+22	+5.4 MV	-0.2 MV	West
G Bet. 23	+6.4 MV	-2.4 MV	E+W
G Bet. 24+25	+2.0 MV -0.3 MV	-1.8 MV +0.1 MV	E+W
H Bet. 12+13	+20.0 MV -18.0 MV	+2.0 MV -4.0 MV	West.
H Bet. 13+14	+3.6 MV -4.0 MV	+1.6 MV -0.8 MV	West.
H Bet. 14+15	+12.0 MV -96.0 MV	+18 MV -4.0 MV	West.
H Bet. 15+16	+140.0 MV -112.0 MV	+12.0 MV -8.0 MV	West.
H Bet 16+17	+15.0 MV -14.0 MV	+3.0 MV -4.0 MV	West.
H Bet. 17+18	+2.6 MV -3.8 MV	-1.4 MV +3.4 MV	W+E
H Bet. 18+19	+7.4 MV -6.8 MV	+1.6 MV -0.0 MV	West.
H Bet. 19+20	+0.2 MV -0.1 MV	+0.05 MV -0.05 MV	West.
H Bet. 21+22	+25. MV -24. MV	+0.05 MV -5.0 MV	West.
H Bet 22+24	-30.0 MV -22.0 MV	+5.0 MV +12.0 MV	W+E
H Bet 24+25	+1.8 MV -1.6 MV	+0.0 MV -0.0 MV	West.

Survey

Date	Time	Notes.
June 19	8.00 A.M.	Meter Boxes for Houses 1217+1229
" "	9.00 " "	" " " " 1323+1327
" "	10.00 " "	" " " " 1431+1461
" "	11.00 " "	" Box " 676 + Hyd.
" "	12.00 " "	" Boxes " 646+666
" "	1.00 P.M.	707 # 19th st. + 1728
" "	1.30 " "	672 # 19th st. + Hyd
" "	2.00 " "	671 # 20th st. + Hyd
" "	3.00 " "	2123+2121 # Faucet
" "	4.00 " "	2245 + Hyd
" "	5.00 " "	2453+2465.
June 20.	8.00 A.M.	Meters for 1219+1225. ± connection Reversed.
" "	9.00 " "	" " 1325+1341.
" "	9.30 " "	" " 1419+1427.
" "	10.00 " "	" " 1519+Hyd. 15th st.
" "	10.30 " "	" " School + Clearinghouse.
" "	11.00 " "	" " 1727+567 # 17th st.
" "	11.30 " "	" " 1821+1837.
" "	12.00 " "	" " 1915+1931.
" "	" "	" " church + 2120.
" "	" "	" " 2245.
" "	" "	" " 2445+2451

Measurement Made	at	Rail Joint	3 Feet Rail	Computations	
H + 25	2.	−2.0 MV	−0.5 MV	West	
	3.				
	4.	−8.0 MV.	−0.5 MV	West	
	5.	−0.5 MV.	−0.0	West	
	6.	−1.0 MV	+2.0 MV.	W + E	
	7.	0	0		
	8.	0	0		
	9.	0	0		
	10.	−1.0 MV +2.0 MV	0	W + E	
	11.	0	0		
	12	−0.5 M	0	West	
	13	0	0		
	14	−6.0 MV	0	West	
	15	0	+3.0	East	
16th	1	−1.0 MV	−0.5 MV	West.	
	2	−0.5 MV	0.	West.	
	3	−50.0 MV +25.0 MV	−0.5 MV +0.5 MV	E + W	✓
	4	−15.0 MV +22.0 MV	−1.0 MV +3.0 MV	E + W	✓
	5	−1.0 MV	−0.5 MV	West.	
Brake in Rail		+50.	0	East	✓
	6	−6.0 MV	+0.5 MV	East	
	7	−0.5 MV	0		

Date Time	Notes
June 22 8.00 AM.	second from corner.
	End of Trolley system not tyed.
	No registration.
	1
	no registration
	" "
	" "
	" "
	" "
	when car passed
	First Joint East of corner
	Bad Joint
	" "
	Bad Joint

Drop measurements on Rails. 50

Measurement Made	at	Rail Joint	3 Feet Rail	Computations	Date	Time	Notes.
8.		+5.0 MV	+0.5 MV		June 22	10.30	
1.	17+H.	-2.5 MV	-0.5 MV				First Joint at E. Corner
2.		-3.0 MV	-0.0 MV				
3.		+40. MV	+3.5 MV	←			Bad Joint.
4.		-1.0 MV	0				
5.		-7.0 MV	-0.5 MV				
6.		+45.0 MV	+3.0 MV	←			Bad Joint.
7.		-2.0 MV	-0.5 MV				
8.		+20.0 MV	+7.0 MV	←			
9.		+50.0 MV	+8.0 MV	← Change			Bad Joint
1.	18+H	+2.5 MV	+1.0 MV.				
2.		+25.0 MV	+6.0 MV	←			
3.		-1.0 MV	-0.5 MV				
4.		-3.0 MV	-0.5 MV				
5.		-2.5 MV	-0.5 MV				
6.		-1.5 MV	-0.0 MV				
7.		-2.5 MV	-0.5 MV				
8.		+35.0 MV	+3.5 MV	←			Bad Joint
1.	19+H	+6.0 MV	+6.0 MV		June 23	8.00 AM.	First joint E. of Corner
2.		+50.0 MV	+5.0 MV	←			Bad Joint
3.		+100.0 MV	+35.0 MV	←			Bad Joint
4.		+16.0 MV	+4.0 MV	←			
5.		+18.0 MV	+7.0 MV	←			
6		+10.0 MV	+6.0 MV				
7.		+12.0 MV	+4.0 MV	←			

Measurement Made at	Maximum	Minimum	Direction of Current.
Bet. F+G. on 24st	+4.0MV -8.6MV	-3.0MV -1.0MV.	N.+S.
22st. Bet. F+G	-7.8MV +3.0MV	-2.0MV -1.2MV	South small portbly det.
22st. Bet. G+H	-6.6MV +6.0MV	+4.0MV -2.0MV	South
21st. Bet. G+H	+6.6MV -3.0MV	-2.0MV +2.6MV	N+S
21st. Bet. F+G.	-8.0MV -42.0MV	+4.6MV +24.0MV	South
20st. Bet F+G	-4.0MV -3.4MV	+3.8MV +2.4MV	N+S
20st Bet. G+H	-9.6MV -4.0MV	+2.0MV +3.4MV	South
19th Bet. G+H	-6.0MV +4.6MV	+5.6MV -4.0MV	N+S
19th. Bet. F+G	+7.4MV +10.0MV	-4.6MV -2.8MV	North
18th Bet F+G	-3.6MV -3.4	+3.4MV +2.6MV	N+S
	F st. Verications		
F Bet. 14+15	-35.0MV +40.0MV	-12.0MV +13.0MV	West.
F Bet. 15+16	+32.0MV -37.0MV	+12.0MV +15.0MV	West.
F+17	-10.0MV +14.0MV	+7.0MV -9.0MV	E+W.
F+18	+8.0MV -7.0MV	-6.0MV +9.0MV	E+W
F Bet. 21+20	+21.0MV +17.0MV	+7.0MV +4.0MV	West.
F Bet. 22+23	+3.0MV -2.0MV	+0.6MV -0.2MV	West Across st.
F Bet. 24+25	+3.6MV -3.0MV	+1.6MV -0.1MV	West
25 Bet. F+E	+2.4MV -3.6MV	-0.6MV -0.4MV	West
18th. Bet G+H	-7.6MV +8.2MV	+2.4MV -3.4MV	South.
17th. Bet. G+H	-50.0MV +40.0MV	+10.0MV -20.0MV	South.
17th Bet F+G	-6.0MV +4.2MV	-2.0MV +1.0MV	South
16th. Bet. F+G	+10.0MV -15.0MV	+2.2MV -4.0MV	North

Date	Time	Notes.
June 22.	1.30PM.	
	9.00AM	Meters For Houses No. 771 + 736
	9.30AM	" " " " 667 + 625
	10.00AM	" " " " 734 + 735
	11.40AM	" " " " 631 + 3004.
	1.29PM	" " " " 755 + 737
	1.50AM	" " " " 639 + 633
	2.05AM	" " " " 643 + 634
	2.24AM	" " " " 735 + 727
	2.39AM	" " " " 753 + 737
June 23.	3.30PM.	Meters For 1441 + 1455
		" " 1547 + Meter Chamber
		" " + Hyd.
		" " 1841 + Hyd.
		" " 770 + 2031
		" " 3140 + 3158
June 24.		" " 2439 + 3345.
		" " 811 + 827.
	2.57AM	Meters For Houses No. 630 + 636
	3.45AM	" " " " 636 + 652
	4.20AM	" " " " 721 + 718
	4.41AM	" " Bakery + House No. 734.

Measurement Made	at	Rail Joint	3 Feet Rail	Direction of Current
24+H	1	+8.0MV.	+4.0MV	West
	5	+50.0MV	+8.0MV	" ↙
	8	+25.0MV	+8.0MV	" ↙
	11	+16.0MV	+8.0MV	" ↙
H+19	8	+80.0MV	+12.0MV	" ↙
H+20	1	+10.0MV	+6.0MV	"
	2	+12.0MV	+4.0MV	" ↙
	3	+24.0MV	+8.0MV	" ↙
	4	+20.0MV	+2.5MV	" ↙
	5	+6.0MV	+3.0MV	"
	6	+8.0MV	+2.0MV	" ↙
	7	+120.0MV	+12.0MV	" ↙
	8	+48.0MV	+8.0MV	" ↙
	9	+16.0MV	+2.0MV	" ↙
H+21	1	+12.0MV	+8.0MV	"
	2	+10.0MV	+4.0MV	" ↙
	3	+50.0MV	+10.0MV	" ↙
	4	+200.0MV	+10.0MV	" ↙
	5	+44.0MV	+12.0MV	" ↙
	6	+18.0MV	+4.0MV	" ↙
	7	+12.0MV	+6.0MV	"
	8	+32.0MV	+8.0MV	" ↙
	9	+28.0MV	+12.0MV	" ↙
H+22	1	+20.0MV	+4.0MV	" ↙
	2	+24.0MV	+8.0MV	" ↙

Drop Measurements on Rails.

Date	Time	Notes
June 22	4:00	right at the corner E.
		Bad Joint.
		Bad Joint.
		Bad Joint
		" "
		Bad Joint
		" "

Measurement Made	at	Rail Joint	3 Feet of Rail	Direction of current
H + 23,	3.	+12.0MV	+8.0MV	
	4.	+10.0MV	+8.0MV	
	5.	+12.0MV	+4.0MV	←
	6.	+8.0MV	+4.0MV	
	7.	+200.0MV	+6.0MV	←
	8.	+32.0MV	+8.0MV	←
	9.	+12.0MV	+4.0MV	←
	10.	+200.0MV	+12.0MV	←
	11.	+16.0MV	+8.0MV	←
	12.	+64.0MV	+10.0MV	←
	13.	+24.0MV	+6.0MV	←
		Maximum	Minimum	
16th Bet. O + H		+15.0MV −22.0MV	−2.6MV +2.0MV	North

Measurement Made	at	Rail Joint	3 Feet of Rail	
17 + Dst.	1	+1.4MV −0.4 " "	+1.0 MV +0.2 " "	
	2	+2.8 " " +0.0 " "	+1.2 " " +0.4 " "	
	3	+1.2 " " +0.0 " "	+1.6 " "	
	4	+1.6 " "	+0.3 " "	
	5	+2.0 " "	+1.6 " "	
	6	+1.6 " "	+0.8 " "	
	7	+1.0 " " −2.0 " "	+1.4 " "	
	8	+1.4 " " +0.8 " "	+2.4 " "	
	9	+3.4 " "	+1.2 " "	←
18 + Dst	1	+2.2 " "	+0.6 " "	

Date Time	Notes.
June 23, 1.00 PM	
	Bad Joint
	Bad Joint
	Bad Joint
June 24, 5.5 PM	Meter Bonds for House nos. 641 & 651
June 25, 8.30 AM.	First Joint west of Corner and read North
8.45 AM	
9.00 AM	
9.30 AM	
" " " " " " " "	

Measurement Made	at.	Rail Joint	3 Feet Rail	Direction current
2	2.	+1.8 MV	+1.4 MV	
	3.	+1.2 MV	+1.2 MV	
	4.	+1.0 MV	+0.6 MV	
	5.	+1.2 MV	+0.5 MV	
	6.	+1.8 MV	+1.6 MV	
	7.	+1.4 MV	+1.6 MV	
	8.	+2.60 MV	+2.6 MV	
	9.	+1.4 MV	+1.2 MV	
187 Dst	1.	+1.0 MV	+0.8 MV	
	2.	+3.2 MV	+2.0 MV	
	3.	+1.0 MV -0.4 MV	+0.6 MV	
	4.	+1.2 MV	+0.8 MV	
	5.	+1.3 MV	+0.6 MV	
	6.	+4.0 MV	+2.0 MV	
	7.	+3.4 MV	+0.8 MV	
	8.	+1.6 MV	+0.6 MV	
	9.	+0.8 MV -0.4 MV	+0.4 MV	
20+ Dst	1.	+4.4 MV	+1.8 MV	✓
	2.	+6.6 MV	+1.2 MV	✓
	3.	+1.2 MV	+0.6 MV	
	4.	+1.8 MV	+1.0 MV	
	5.	+1.6 MV -1.4 MV	-1.8 MV	
	6.	+1.8 MV	+0.6 MV -0.4 MV	
	7	+1.6 MV	+0.8 MV -0.6 MV	
	8	+1.0 MV	-0.8 MV	

Date	Time	Notes.
	9.45	
	10.00 AM	
	10.15 AM	First Joint East of Corner
	11.00	First Joint East of corner
	11.15	

Measurement Made	at	Rail Joint	3 Feet Rail	Direction of current
21+ Dst	1.	±8.8 MV ±8.6 MV	+0.2 MV	
	2.	+42.0 MV	+1.5 MV -1.0 MV	✓
	3.	+22.0 MV	+2.0 MV	✓
	4.	+1.2 MV	+0.8 MV	
	5.	+10. MV	+0.4 MV	✓
	6.	+1.0 MV	+0.2 MV	
	7.	+1.2 MV	+1.0 MV	
	8.	+1.0 MV	+1.2 MV	
	9	+1.2 MV	+0.6 MV	
22+ Dst.	1	+3.8 MV	+2.6 MV	
	2	+3.4 MV	+1.0 MV	✓
	3	+1.0 MV	+0.5 MV	
	4	+1.0 MV	+0.6 MV	
	5	+2.0 MV	+1.0 MV	
	6	+1.4 MV	+0.8 MV	
	7	+1.8 MV	+1.2 MV	
23+ Dst	1	+0.8 MV	+0.8 MV	
	2	+1.2 MV	+0.8 MV	
	3	+1.8 MV	+0.8 MV	
	4	+15.0 MV	+0.4 MV	✓
	5	+0.8 MV	+0.8 MV	
	6	+2.0 MV	+1.6 MV	
	7	+9.0 MV	+0.8 MV	✓
	8	+1.4 MV	+0.8 MV	
24+ Dst.	1	+2.0 MV	+1.6 MV	

Date	Time	Notes.
June 25	11.20	First Joint East of corner
		Bad Joint
		" "
		" "
	11.25	
		First Joint East of corner
	11.45	First Joint East of corner
		Bad Joint
		Bad Joint
	1.00 P.M.	First Joint East of Corner

Measurements Made at		Rail Joint	3 Feet Rail		Date	Time	Notes
24+D	2	+6.2 MV	+1.0 MV	✓		1.16 PM	Bad Joint
	3	+1.2 MV	+0.3 MV				
	4	+1.8 MV	+0.6 MV				
	5	+1.8 MV	+1.4 MV				
	6	+1.6 MV	+1.0 MV				
	7	+42.0 MV	+1.0 MV	✓			Bad Joint
	8	+1.2 MV	+0.6 MV				
	9	+8.0 MV	+1.4 MV	✓			" "
	10	+1.2 MV	+0.6 MV				
	11	+3.2 MV	+1.0 MV	✓		1.43 PM	
	12	+2.2 MV	+1.8 MV				
	13	+4.0 MV	+2.0 MV				
	14	+8.4 MV	+0.2 MV	✓			Bad Joint,
	15	+0.2 MV	+0.1 MV				
	16	+0.1 MV	+0.05 MV			1.53 PM	
	17	+300.0 MV	+0.0 MV	✓			No Bound.
	18	+5.4 MV	+0.2 MV	✓			Bad Joint

Measurements Made at.	10 Sec. Reading for 2 min.	Computations		Direction of current	Average Reading	Date	Time	Notes
D+25	+10.0 MV			North		June 25	3.15 P.M. to 3.17	Meter Box Fire Station 25 + Hyd.
	+5.0 MV							
	+9.0 MV							
	+4.0 MV							
	+3.0 MV	13)68.00	5.23					
	+6.0 MV	65			5.23 MV			
	+4.0 MV	3.0						
	+7.0 MV	26						
	+2.0 MV	40						
	+3.0 MV	39						
	+4.0 MV							
	+4.0 MV							
	+7.0 MV							
	68.0							
25 Bet. D+E	-0.6 MV	+0.1		South		" "	4.05 P.M.	Meter Boxes for Houses No. 915 + 913
	-0.8	+0.2	-9.2					
	-0.5	+0.3	+0.3					
	-1.3		13)-8.9	0.68+				
	-0.4	-0.6	78					
	-1.0	-0.8	110					
	-1.4	-0.5	104					
	+0.1	-1.3	6					
	-0.8	-0.4						
	-0.8	-1.0						
	-0.2	-1.4						
	-1.4	-0.8						
	+0.2	-0.8						
		-0.2						
		-1.4						
		-9.2						

Measurements Made at	10 sec. Reading For 2 Min.	Computations		Direction	Average Reading
25' Bet F+G	-0.3	+1.0		south	
	-1.2	+1.4			
	-1.4	+2.4			
	+1.0				
	-0.4				
	-0.4	-0.3	-10.7		
	-1.4	-1.2	+2.4		
	-2.0	-1.4	(12) 8.3	0.69+	-0.69+
	-1.0	-0.4	72		
	-0.6	-0.4	110		
	-2.0	-1.4	108		
	+1.4	-2.0	2		
		-1.0			
		-0.6			
		-2.0			
		-10.7			
25' Bet. G+H	-20.0 MV				
	-13.0 " "	-20.0	+50.0	South	
	-19.0 " "	-19.0	+25.0		
	+50.0 " "	-22.0	+15.0		
		-25.0	+10.0		
	+25.0 " "	-45.0	100.0		
	-22.0 " "	-10.0			
	-25.0 " "	-20.0			
		-4.0			
	-45.0	165.0			
	-10.0	100.0			
		(3) 65.0	5.0 MV		
	+15.0	65			
		00			
	+10.0				
	-20.0				
	-4.0				

Date. Time	Notes
June 26, 8.50 AM.	Meter Boxes for Houses 759 + 769.
" " 9.30 AM	Meter Boxes for Houses 334 + 644.

Measurements Made at	10 Sec. Readings for 2 min.	Computations	Direction	Average Readings	Date	Time	Notes.
25' Bet. H & I	-0.4		North		June 26	10.10 AM	Meter Boxes for 5'21 + 5'25'
	+0.8						
	+1.4						
	+0.6						
	-0.05						
	-1.2						
	-2.0						
	-0.8						
	+0.4						
	+1.8						
	+1.4						
	-0.6						
25' Bet. I & J	-1.4 mv		South			11.47 AM	Meter Boxes For Houses 428 + 471.
	-0.6						
	-1.6						
	-1.2						
	-1.4						
	+1.4						
	+4.0						
	-1.6						
	-0.8						
	+4.2						
	-3.4						
	-2.6						

69

Measurements Made at.	10 sec. Reading For 2. min	Computations		Direction of Current	Average Reading	Date	Time	Notes.
25 Bet. J+K	+1.2			North		June, 26.	1.30 P.M.	Meter Boxes for Houses 319 + 325
	−0.4							
	+0.6							
	+1.2							
	+1.0							
	+1.4							
	+1.2							
	+1.6							
	+0.6							
	+2.4							
	+3.4							
	+3.6							
26 Bet K+L	+1.0			North		" "	2.45 " "	Meter Boxes for Houses 226 + 238
	+0.9							
	+1.0							
	+1.0							
	+0.9							
	+1.0							
	+1.0							
	+1.0							
	+0.9							
	+0.9							
	+1.0							
	+1.0							

Measurements Made at	10 sec. Readings For 2. min	Computations	Direction of Current	Average Reading
25 Bet. L+M	+2.4 MV		North	
	+2.6 MV			
	+2.8 " "			
	+2.0 " "			
	+0.2			
	+1.0			
	+1.8			
	+3.6			
	+2.8			
	+0.6			
	+2.0			
	+0.1			
25 Bet. M+N	-40.0 MV		south	
	-28.0 " "			
	-16.0 " "			
	-8.0 " "			
	-32.0 " "			
	-28.0 " "			
	-32.0 " "			
	-20.0 " "			
	-28.0 " "			
	-44.0 " "			
	-28.0 " "			
	-12.0 " "			
	-20.0 " "			

Date	Time	Notes
June 26	3.51	Meter Boxes for Houses 129 + 137
June 26,	4.30	Meter Boxes for Houses 29 + 31

Service drop Tests of Washington Dist.

	10 sec. Readings For 2 min.	Computations		Direction of Current	Average Reading	Date	Time	Notes.
2nd St.	-3.0			North		June 27.	8.15 AM.	Meter Boxes for Houses 3837 + 3839
Bet	-3.4							
Robinson	-2.8							
+	-1.8							
University	-2.4							
	-2.4							
	-4.6							
	-3.8							
	-4.8							
	-4.2							
	-4.8							
	-6.0							
2nd St.	-0.4			North		" "	8.45	Meter Boxes for Houses 3945 + 3949.
Bet.	-0.5							
	-0.2							
University	+0.1							
+	-0.7							
	-0.6							
Washington	-0.5							
	-1.0							
	-1.2							
	-0.4							
	-1.0							
	-1.4							

Measurement Made at	10 sec. Readings For 2 min.	Computations	Direction of Current	Average Reading	Date	Time	Notes
Washington Bet. 1st + 2nd	+0.2 MV		East		June 27,	9.15 AM	Connection made bet. Faucet of No 129 + Meter No 131
	+0.1						
	+0.2						
	+0.3						
	+0.1						
	+0.4						
	-0.1						
	+0.2						
	+0.3						
	+0.2						
	0.0						
	+0.3						
Washington Bet. 2nd + 3rd.	-0.8 MV		West		" "	9.50 AM	" " " Houses No 108 + 121
	-2.2						
	-0.8						
	-4.2						
	+0.6						
	+0.4						
	-0.4						
	+1.0						
	-1.0						
	+0.6						
	-0.6						
	-2.0						

Measurements Made at	10 sec. Readings For 2 min.	Computations	Direction of current	Average Reading
3rd. st.	−2.6 MV		North.	
Bet.	−1.0 " "			
Washington	−1.0 " "			
+	−1.8 " "			
University	−3.2 " "			
	−0.8 " "			
	−2.4 " "			
	−0.6 " "			
	−0.7 " "			
	−1.4 " "			
	−0.3 " "			
	+0.5 " "			
3rd. st.	+42.0 MV		South.	
Bet.	+39.0 " "			
University	+37.0 " "			
+	+40.0 " "			
Robinson	+37.0 " "			
	+33.0 " "			
	+35.0 " "			
	+35.0 " "			
	+37.0 " "			
	+44.0 " "			
	+40.0 " "			
	+37.0 " "			

Date	Time	Notes
June 27	10.20 AM.	Meter Boxes for Houses No 3930 to 3944
	10.50 AM	Meters Boxes for Houses No 3867 to 3861.

Measurements Made at	10 sec. Reading For 2 min.	Computations		Direction of current	Average Reading
4th st.	+7.0			south	
Bet.	+6.0				
Robinson	+4.0				
+	+3.0				
University	+5.0				
	+4.0				
	+8.0				
	+8.0				
	+7.0				
	+9.0				
	+12.0				
	+4.0				
4th st.					
Bet.	-0.8 MU	-0.8	+0.8	North.	
University	-0.6	-0.6	+0.4		
+	-0.2	-0.2	1.2		
Washington	+0.8	-0.4			
	-0.4	-0.8			
	-0.8	-0.4			
	+0.4	-0.6			
	-0.6	-0.8			
	-0.6	-0.8			
	-0.8	-0.9			
	-0.8	-6.4			
	-0.9	+1.2			
		12)-5.2(-4.3			
		48			
		40			
		36			
		4			

Average Reading = -0.433+

Date	Time	Notes.
June 27	11.52	Meter Boxes for Houses No. 3825 + 3833
June 29	8.45	Meter Boxes for Houses No. 3936 + 3942

Measurements Made at	10 sec. Reading For 2 Min.	Computations	Direction of Current.	Average Reading	Date	Time	Notes
5th. St.	-1.6 MV		North		June 29.	10.10 AM	Meter Boxes For 3962 + 3956
Bet.	-0.6 "						
	-0.8						
Washington	-1.2	12) 21.9 (1.82					
+	-3.0	12					
	-2.0	9.9		-1.82 MV			
University	-0.6	96					
	-2.4	30					
	-3.6	24					
	-2.1						
	-1.8						
	-2.2						
	-21.9						
5th St.	+14.6 MV		south.		" "	10.35 "	Meter Boxes for Nos. 3836 + 3846
Bet.	+14.0						
	+19.0	12) 191.00 (15.92					
University	+18.0	12					
	+16.0	71					
+	+13.0	60					
	+15.0	110		+15.92 MV			
Robinson	+17.0	108					
	+16.0	20					
	+18.0	12					
	+15.0	80					
	+16.0						
	191.0						
6th. St.	+1.2 MV		south		" "	11.17 AM	Meters Boxes for Nos.
Bet.	+1.0 MV	12) 12.20 (1.016 +					
	+1.0 "	12.					
University	+0.9	0020					
	+1.4	12					
+	+1.4	80		+1.016 MV			
	+1.0	72					
Robinson	+0.4	8					
	+2.0						
	+1.0						
	+0.4						
	+1.4						
	+12.2 M.V.						

Measurements Made at	10. Sec. Readings for 2 min	Computations	Direction of Current	Average Readings
	+1.2			
Washington + 6th, St.	+0.3 MV.	9 -1.0 -1.2 -0.8 -0.6 -0.6 -0.8 -0.4 -0.8 -1.0 -0.4 -6.60	North	
	-1.0			
	-1.2			
	-0.8			
	+0.4			
	-0.6			
	-0.6			
	-0.8			
	-0.2			
	-1.0			
	-0.4			
	+2.0 MV			
University Bet. 5th + 6th	+0.8		West.	
	-0.8			
	+1.0			
	+1.4			
	+1.0			
	+2.0			+1.57 MV
	+0.6			
	+2.2			
	+4.0			
	+1.4			
	+1.8			
	+18.2			
University Bet. 4th + 3rd	-4.0.0		West	
	+3.8.0			
	+12.0			
	+20.0			
	+28.0			
	+38.0			
	+48.0			+32.33 MV
	+60.0			
	+28.0			
	+40.0			
	+20.0			
	+16.0			
	388.0			

Date	Time	Notes
June 29.	1.00 P.M.	Contact made bet Hyd + Faucet.
" "	3.20 " "	Meter Boxes for Houses 1459 + 1416
" "	3.55 " "	Meter Boxes for Houses No. 327 + 3870 4th

Measurement Made at	10 sec. Readings for 2 min.	Computations	Direction of Current	Average Reading
	-36.0 mv			
University	-35.0		East.	
	-5.0			
Bet. 3rd + 2nd	-45.0	12) 238 (19.16		
	-47.0	12		
	+15.0	110		
	-5.0	108		-19.16
	+10.0	28		
	-20.0	20		
	-33.0			
	-5.0			
	-7.0			
	263.0			
	25.0			
	238.0			

Date	Time	Notes
June 29	4.15	Meter Boxes For Houses No 1109 to 1145

Measurement Made at		Rail Joint	3 Feet Rail
6th + University	1	-0.6 MV	-0.4 MV
	2	+0.6 MV	-0.4 MV
	3	-0.8 MV	+0.2 MV -0.4 MV
	4	+1.4 MV	+1.0 MV
on curve	5	+0.4 MV	+0.2 MV
" "	6	+1.0 MV	+0.8 MV
5th + University	1	+1.4 MV	+0.6 MV
	2	-0.6 MV	-0.2 MV
	3	+0.4 MV	-0.4 MV
	4	+0.4 MV	-0.2 MV
	5	-0.8 MV +0.6 MV	-0.6 MV +0.4 MV
	6	-0.6 MV	-0.4 MV
	7	+1.2 MV	+0.8 MV
	8	+0.8 MV	+0.4 MV
	9	+0.8 MV	+0.6 MV

Ground Tests Foot of 5th St.

5 st. Bet H + I	Pipe to Earth	P to E when Car Pulled	Pipe to Rail	P to R when Car Pulled	July 2.		
Front of No. 553	-0.2 V	-0.4 V	-1.8 V	-3.0 V	" "	11.00 AM	connection made at main
Front of No. 635	-0.1	-0.2 V	-1.6	-2.0 V	" "	11.45 AM	connection made at main.

Drop Measurements on Rails

Date	Time	Notes
June. 30	8.00 AM	1st Joint at East corner of 6th + Uni. 90 Lb Rails
		First Joint south of corner (West Rail on Southbound Track.)

Measurement Made at.		Rail Joint	3 Feet of Rail
5th + Robinson	1	+0.7 MV	+0.5 MV
	2	+1.0 MV	+0.6 MV
	3	+3.0 MV	+1.0 MV
	4	+0.6 MV	+0.7 MV
	5	+1.2 MV	+0.6 MV
	6	+3.0 MV	+1.2 MV
	7	+0.4 MV	+0.2 MV
	8	-0.4 MV	-0.2 MV
	9	+0.6 MV	+0.4 MV
	10	+0.8 MV	+0.4 MV
	11	-0.2 MV	-0.2 MV
on curve	12	-0.6 MV	-0.4 MV
" "	13	+0.8 MV	+0.6 MV
5th + University	1	+0.6 MV	+0.4 MV
	2	+0.2 MV	+0.1 MV
	3	+1.2 MV	+0.6 MV
	4	+0.4 MV	+0.2 MV
	5	-0.6 MV	-0.4 MV
6th + University	1	+1.0 MV	+0.4 MV
	2	+0.8 MV	+0.2 MV
	3	+1.2 MV	+0.4 MV
	4	-0.6 MV	-0.4 MV
5th + University	5	+0.4 MV	+0.2 MV
	1	+0.4 MV	+0.3 MV
	2	+0.6 MV	+0.3 MV

Drop Measurements on Rails

Date	Time	Notes
June 30.	9.30 AM	East Rail on southbound Track counting from First Joint south of corner and going North
" "	11.00	First Joint East of corner.
" "	11.30 AM	North Rail on outbound car First Joint East of East corner & Read West.
	11.40 AM	First Joint on curve North of corner Read South.

Measurement Made at		Rail Joint	3 Feet Rail
University + 5th. st.	3	+0.4 MV	+0.2 MV
	4	+1.0 MV	+0.7 MV
	5	+0.6 MV	+0.4 MV
	6	+0.6 MV	+0.4 MV
	7	+0.6 MV	+0.2 MV
	8	+1.4 MV	+0.8 MV
	9	+1.8 MV	+0.4 MV
	10	+1.6 MV	+0.8 MV
	11	+0.6 MV	+0.3 MV
	12	+0.6 MV	+0.4 MV
5th + Robinson	1	+1.2 MV	+0.6 MV
	2	+0.6 MV	+0.3 MV
	3	+0.6 MV	+0.3 MV
	4	-1.6 MV	+0.6 MV
	5	+1.8 MV	+1.0 MV
	6	+0.7 MV	+0.3 MV
	7	+1.0 MV	+0.6 MV
	8	+2.0 MV	+0.8 MV
	9	-0.6 MV	-0.2 MV
	10	+0.3 MV	+0.2 MV
	11	+0.8 MV	+0.6 MV
5th + University	1	+0.8 MV	+0.3 MV
	2	+0.4 MV	+0.2 MV
	3	+0.6 MV	+0.2 MV
	4	+0.6 MV	+0.4 MV
	5	+0.6 MV	+0.2 MV

Date	Time	Notes
June 30	1.00 P.M.	
" "	1.35 P.M.	East Rail of North bound car First Joint south of corner + Road north.
		First Joint East of corner on curve.

Measurement Made at		Rail Joint	3 Feet Rail	
2nd + Robinson	1	+1.0 MV	+0.5 MV	
	2	+1.0 MV	+0.4 MV	
	3	+0.8 " "	+0.4 " "	
	4	+0.8 " "	+0.6 " "	
	5	+1.0 " "	+0.5 " "	
	6	+0.8 " "	+0.6 " "	
	7	+1.0 " "	+0.4 " "	
	8	+1.0 " "	+0.8 " "	
	9	+1.4 " "	+0.8 " "	
	10	+0.8 " "	+0.4 " "	
	11	+1.6 " "	+0.8 " "	
	12	+0.8 " "	+0.5 " "	
	13	+1.6 " "	+0.8 " "	
	14	-1.0 " "	-0.4 " "	
2nd + University	1.	+0.8 " "	+0.5 " "	
	2.	+1.2 " "	+0.8 " "	
	3.	+1.0 " "	+0.6 " "	
	4	+0.6 " "	+0.3 " "	
	5	+0.8 " "	+0.4 " "	
	6	+1.0 " "	+0.4 " "	
	7	+1.6 " "	+0.8 " "	
	8	+1.2 " "	+0.8 " "	
	9	+3.6 " "	+1.6 " "	✓
	10	+4.0 " "	+1.4 " "	✓
	11	+2.0 " "	+1.8 " "	

Date	Time	Notes.
June 30	3.30 PM	West Rail on South bound Track First Joint North of North Corner
June 30.	4.07 PM	First Joint at corner

Measurement Made at		Rail Joint	3 Feet Rail	
2nd + University	12	+2.0 MV	+1.0 MV.	
	13	+1.2 MV	+0.8 MV	
	14	+1.8 MV	+1.0 MV	
	15	+1.6 MV	+0.6 MV	
	16	+1.2 MV	+0.5 MV	✓
	17	+1.2 MV	+0.8 MV	
	18	+3.6 MV	+2.0 MV	
2nd + Washington		+1.2 MV	+0.8 MV	
	2	+3.0 MV	+1.8 MV	
	3	+2.0 MV	+0.8 MV	
	4	-1.6 MV	-0.8 MV	
	5	+1.8 MV	+0.6 MV	✓
	6	-1.2 MV	+0.6 MV	
	7	+1.0 MV	+0.8 MV	
	8	+1.4 MV	+0.6 MV	
	9	+2.0 MV	+0.8 MV	
1st + Washington		+1.4 MV	+0.7 MV	
	2	+2.0 MV	+1.6 MV	
	3	+1.8 MV	+1.4 MV	
	4	+360.0 MV	+0.6 MV	✓
	5	-1.2 MV	-0.8 MV	
	6	+1.6 MV	+0.6 MV	✓
	7	+0.8 MV	+0.4 MV	
	8	+2.0 MV	+0.8 MV	
	9	+1.0 MV	+0.5 MV	

Date	Time	Notes
June 30	4.30.	
July 1st.	8.00 AM.	
" "	9.20	First Joint West of corner, Read West.
" "	9.40	First Joint East of corner Read East. East Rail on southbound Track
		Bad Joint.

Measurement Made at	Rail Joint	3 Feet Rail
1st + Washington 10	+1.2 MV	+0.6 MV
2nd + Washington	+1.8 MV	+1.0 MV
2	+1.6 MV	+0.8 MV
3	+0.8 MV	+0.4 MV
4	+1.0 MV	+0.6 MV
5	+1.2 MV	+0.8 MV
6	+1.4 MV	+0.8 MV
7	+2.0 MV	+0.8 MV
8	+1.8 MV	+0.6 MV ✓
9	+1.4 MV	+1.0 MV
10	+0.6 MV	+0.4 MV
11	+1.2 MV	+0.8 MV
12	+1.6 MV	+0.8 MV
13	+0.8 MV	+0.4 MV
14	+0.6 MV	+0.2 MV
15	+1.4 MV	+0.6 MV
16	+1.0 MV	+0.4 MV
17	+1.2 MV	+1.0 MV
18	+1.6 MV	+0.8 MV
2nd + University 1	+0.8 MV	+0.6 MV
2	+0.6 MV	+0.4 MV
3	+0.8 MV	+0.4 MV
4	+1.0 MV	+0.6 MV
5	+0.6 MV	+0.6 MV
6	+1.8 MV	+0.6 MV ✓

Date	Time	Notes
July 1.	10.20	
" "		First Joint south of corner Read south.
" "	11.30 AM	First Joint south of corner.

Measurement Made at	Rail Joint	3 Feet Rail	
2nd + University	7 +0.6 Mv	+0.4 Mv	
	8 +0.8	+0.5	
	9 +1.6	+0.8	
	10 +1.8	+0.6	✓
	11 +1.2	+0.4	
	12 +1.4	+0.4	
	13 +0.8	+0.3	
2nd + Robinson	1 +2.0 Mv	+0.6 Mv	✓
	2 +0.6 Mv	+0.3	
	3 +1.8 Mv	+0.6 Mv	✓
	4 +1.2	+0.7	
	5 +0.6	+0.2	
	6 +1.0	+0.7	
	7 +0.6	+0.3	
	8 +0.8	+0.4	
	9 +1.4	+0.8	
	10 +3.8	+0.8	✓
	11 +2.40	+0.6	✓
	12 +1.60	+0.4	✓
	13 +0.7	+0.3	
	14 +1.8	+0.8	
	15 +1.4	+0.6	
	16 +1.8	+0.8	
	17 +0.8	+0.4	
	18 +1.6	+0.6	✓

Date	Time	Notes.
July 1.	1.00 PM	
" "	1.51 PM	First Joint North of Corner Road North. West Rail on Northbound Track.
		Bad Joint

Measurement Made at		Rail Joint	3 Feet Rail	
2nd + Robinson	19	+3.0 Mr	+0.4	✓
2nd + University	1	+0.4 Mr	+0.2	
	2	+0.6	+0.3	
	3	+0.8	+0.4	
	4	+65.0	+0.4	✓
	5	+1.0 Mr	+0.4	
	6	+3.0	+0.4	✓
	7	+2.4	+0.6	✓
	8	+20.0	+0.4	✓
	9	+1.8	+0.8	
	10	+5.0	+1.0	✓
	11	+1.8	+0.8	
	12	+10.0	+2.0	✓
	13	+1.0	+0.8	
	14	+1.6	+1.0	
	15	+1.8	+0.6	
	16	+9.6	+0.4	✓
	17	+1.8	+0.6	
	18	+1.4	+0.4	
	19	+2.0	+0.8	
2nd + Washington	1	+2.0	+1.0	
	2	+0.8	+0.4	
	3	+1.8	+0.6	
	4	+1.0	+0.4	
	5	+0.8	+0.6	

Date	Time	Notes
July 1	2.20 PM	First Joint north of corner Read North
		Bad Joint
		Bad Joint
		Bad Joint
July 1	3.30 PM	First Joint West of corner & Reading West.

M	Measurement Made at	Rail Joint	3 Feet Rail	
2n	2nd + Washington 6	+1.2 MV	+0.6 MV	
2n	7	+3.4	+0.4	✓
	8	+1.6	+0.4	✓
	9	+2.0	+0.6	✓
	10	+1.0	+0.4	
	1st + Washington 1	+0.8	+0.4	
	2	+1.4	+0.4	✓
	3	+1.0	+0.6	
	4	+0.6	+0.3	
	5	-24.0	-0.2	✓
	6	+20.0	+2.0	✓
	7	+25.0	+1.0	✓
	8	+1.2	+0.4	
	9	+1.0	+0.6	
	On curve, 10	+0.8	+0.6	
	" " 11	+0.6	+0.3	
	2nd + Washington 1	+0.4	+0.2	
	2	+0.6	+0.3	
	3	+0.8	+0.5	
	4	+10.0 MV	+1.0 MV	✓
2n	5	+0.8	+0.3	
	6	-50.0 MV +600.0 MV	-0.2 MV	✓
	7	+0.8	+0.3	
	8	+0.6	+0.2	
	9	+3.0	+0.4	✓

Date	Time	Notes
July 1	3:50	
	4.05	East Rail on North bound Track Joint opposite corner Read East.
		Bad Joint
		" "
		" "
		" "
July 2.	8.00 AM.	
"	"	First Joint south of corner.
		Bad Joint
		Bad Joint J. of Curve

Measurements Made at	Rail Joint	3 Feet Rail	
2nd + Washington 10	+1.8 MV	+1.40 MV	
11	+6.0	+1.0	✓
12	+4.0	+0.4	✓
13	+3.8	+1.2	✓
14	−4.0	+1.0	✓
15	+20.0	+2.0	✓
16	+1.8	+0.8	
17	+10.0	+0.8	✓
18	+1.4	+0.6	
19	+1.0	+0.4	
20	+9.0	+0.4	✓
2nd + University 1	+2.0	+1.4	
2	+4.0	+1.0	✓
3	−9.0	+2.0	✓
4	+0.6	+0.3	
5	+1.8	+0.8	
6	+3.0	+0.2	✓
7	+3.6	+0.8	✓
8	+4.0	+0.8	✓
9	+2.0	+1.0	
10	+0.6	+0.4	
11	+0.8	+0.3	
12	+1.2	+0.4	
13	+1.4	+0.8	
14	+0.8	+0.6	

Date	Time	Notes.
July 2	9.15 AM	
		Bad Joint
		Bad Joint
		Bad Joint
July 2	9.02 AM	First Joint south of corner
July 2	1.50 PM	

Measurement Made at

	Rail Joint.	3 Feet Rail	
5th + Mst.	1 +280.0mv	+0.1 MV	✓
	2 -1.2 MV	-0.6 MV	
	3 +600.0MV	+1.0 MV	✓
	4 +25.0MV	+1.0 MV	✓
	5 +50.0MV	+1.0 MV	✓
	6 +5.0MV	+3.0MV	
	7 +20.0MV	+5.0 MV	✓
	8 +10.0MV	+3.0MV	✓
	9 +4.0MV	+1.0MV	✓
	10 +0.6 MV	+0.4 MV	
	11 +1.6MV	+0.8 MV	
	12 +1.6 MV	+0.6 MV	
	13 +1.4MV	+0.5 MV	✓
	14 +1.2 MV	+0.6 MV	
5th + L st.	1 +0.8 MV	+0.4 MV	
	2 +0.4 MV	+0.2 MV	
	3 +1.0 MV	+0.6 MV	
	4 +1.2 MV	+0.8 MV	
	5 +5.0 MV	+1.4 MV	✓
	6 -1.0 MV	+0.4 MV	
	7 +4.0 MV	+0.6 MV	✓
	8 +0.6 MV	+0.4 MV	
	9 +2.0 MV	+0.8 MV	
	10 +3.0 MV	+0.6 MV	✓
	11 +1.2 MV	+0.6 MV	

Measurement of Potential Drop on Rails.

Date	Time	Notes.
July 3.	8.30	First Joint at corner on curve. (East Rail on Northbound Track.)
July 3.	10.15 AM	
July 6	10.45 AM	First Joint North of corner, Read North

Measurement of Service Drop, No

Measurement Made at.		10. sec. Readings For 2 min. Max.	MIN.	Direction of Current	Average Readings	Date	Time	Notes.
5th st. Bet. M + L								
	1.	+2.9	+2.2	North	+2.47 MV	July 3.	2.30 PM.	Bet. First two Meters North of M st.
	2.	+1.8	+0.6	North	+1.04 MV	" "	3.00 PM.	" Meters for Nos. 349 + 359
	3.	+0.8	+0.3	North	+0.62 MV	" "	4.00 PM	" Hyd + Meter at south corner of L + 5th. No. 367
5th + L	1	+0.6	-0.6	North	+0.25 MV	July 6.	8.30 AM	" " + " No. 403
	2	+3.4	-2.0	North	+1.3 MV	" 6	9.00 AM	" Meters No. 425 + 423
	3	+1.4	-0.1	North	+0.57 MV	" 6	9.20 AM	" " " 437 + 437
	4	+4.0	-0.4	North	+1.74 MV	" 6	9.45 AM	" " " 447 + 461

Measurement Made at		Rail Joint	3 Feet Rail	
5th st. + M st.	1	+0.4MV	+0.1MV	
	2	+0.8MV	+0.4MV	
	3	+0.2MV	+0.1MV	
	4	+0.4MV	+0.0MV	
	5	+0.2MV	+0.1MV	
	6	+0.1MV	+0.05MV	
	7	+14.0MV	+0.4MV	✓
	8	+25.0MV	+0.1MV	✓
	9	+0.2MV	+0.1MV	
	10	+0.3MV	+0.1MV	
	11	+0.6MV	+0.4MV	
	12	+1.0MV	+0.2MV	✓
	13	+1.2MV	+0.4MV	✓
	14	+0.4MV	+0.1MV	
	15	-2.0MV	+1.0MV	
	16	+1.0MV	+0.4MV	
	17	+1.2MV	+0.6MV	✓
	18	+12.0MV	+0.4MV	✓
	19	+1.0MV	+0.6MV	
5th + L st	1	+1.8MV	+0.5MV	✓
	2	+1.2MV	+0.2MV	✓
	3	+1.0MV	+0.3MV	
	4	+0.6MV	+0.4MV	
	5	+3.0MV	+2.0MV	
	6	+0.8MV	+0.4MV	

Date	Time	Notes
July 6	11.10 AM.	(West Rail on northbound track) First Joint at corner on curve.
" "	11.50 AM	First Joint North of Corner, Road N.
	1.00 PM	

Measurement Made at		Rail Joint	3 Feet Rail	
5th. + L st	7.	+0.8 MV	+0.2 MV	
	8.	+1.6 MV	+0.4 MV	✓
	9.	+0.6 MV	+0.3 MV	
	10.	+0.8 MV	+0.4 MV	
	11.	+2.0 MV	+0.6 MV	✓
5th. + M st.	1.	+0.6 MV	+0.2 MV	
	2.	+0.4 MV	+0.2 MV	
	3.	+4.6 MV	+0.8 MV	✓
	4.	+10.0 MV	+1.0 MV	✓
	5.	+0.8 MV	+0.3 MV	
	6.	+0.6 MV	+0.2 MV	
	7.	+2.0 MV	+1.0 MV	✓
	8.	+2.0 MV	+0.5 MV	✓
	9.	+1.4 MV	+0.4 MV	✓
	10.	+18.0 MV	+5.0 MV	✓
	11.	+1.2 MV	+0.5 MV	
	12.	+1.4 MV	+0.7 MV	
	13	+1.6 MV	+0.6 MV	✓
	14	+0.8 MV	+0.3 MV	

Date	Time	Notes
July 6	1.15 PM	
		First Joint on curve at corner (East Rail on South bound Track.)
" 6	2.00 PM	

Measurement Made at	10 sec. Reading For 2 Min Maxi.	Mini.	Direction of Current	Average Reading	Date	Time	Notes
30th st. Bet. Wightman & University	-40.0 MV	-11.0 MV	North	-21.5 MV	July 6.	3.50 P.M.	Meters for Houses Nos 3001 + 3825
30th st Bet. Wightman & Gunn.	+2.6 MV	+0.6 MV	South	+1.49 MV	" "	4.10 PM	Meters for Houses No. 3784 + 3794
30th st. Bet. Gunn + Landis	+4.2 MV	+1.4 MV	South	+2.76 MV	" "	4.30 PM	Meters for Houses No. 3746 + 3736
30th st. Bet. Landis + Wright st.	+1.3 MV	+0.1 MV	south	+0.72 MV	July 7.	8.15 AM.	" " " " 3620 + 3630
30th st. Bet. Wright st. + Capps st.	+2.8 MV	+0.4 MV	south	+1.63 MV	" "	9.00 AM	" " " " 3560 + 3570.
30th st Bet. Capps st + Myrtle	+12.0 MV	+3.0 MV	south	+6.79 MV	" "	9.30 AM	" " " " 3524 + 3528
30th st Bet. Myrtle + Upas st.	+0.5 MV	-0.2 MV	south	+0.23 MV	" "	10.00 AM	" " " " 3427 + 3435
Upas st. Bet. Ray / 30th st +	+16.0 MV	+5.0 MV	south	+9.42 MV	" "	10.30 AM.	" " " " 3712 + 3716
Ray st. Bet. 30th st + Myrtle	+39.0 MV	+27 MV	South	+33.33 MV	" "	11.00 AM	" " " " 3430 + 3436
Ray st Bet. Myrtle + Capps	-0.6 MV	0.0	North	-0.14 MV	" "	11.30 AM	" " " " 3420 + 3432.
30th st. Bet. Upas + Thorne	+2.0 MV	+0.4 MV	south	+1.13 MV	" "	1.00 P.M.	" " " " 3346 + 3356.
30th st. Bet. Thorne + Redwood	+9.0 MV	+3.0 MV	south	+5.67 MV	" "	1.30 PM.	" " " " 3167 + 3175.
30th st Bet. Redwood + Quince	+5.0 MV	+1.5 MV	south	+3.04 MV	" "	2.00 PM	" " " " 2932 + 2938.
30th St. Bridge.	+0.5 MV	+0.1 MV	south	+0.29 MV	"	3.00 PM	Taken on 24 in. pipe. Exposed. Dis. 3 Ft.
30th. Bet. Bridge + Laurel st	+200.0 MV	+120.0 MV	south	+156.67 MV	" "	4.30 PM	" " Stand Pipe S. End of Bridge + Service for No. 2528
30th. Bet. Kalmia + Laurel	+5.5 MV	+1.5 MV	south	+3.75 MV	July 8	" 8.00 AM	" " Hyd and Service for No. 2470.
30th Bet. Kalmia + Juniper	+23.0 MV	+2.0 MV	south	+17.0 MV	" "	9.30 AM	" " Services for Houses No. 2324 + 2344
30th Bet. Juniper + Ivy	+2.0 MV	+0.2 MV	South	+1.03 MV	" "	10.00 AM	" " " " Houses No. 2229 + Cross St. Garage.
30th. Bet. Ivy + Hawthorn	+2.2 MV	+0.8 MV	south	+1.42 MV	" "	10.30 AM	" " " " " No. 2170 + 2122
30th Bet. Hawthorn + Grape	-1.0 MV	+0.3 MV	North	-0.22 MV	" "	11.30 AM	" " " " " No. 2025 + 2034.
30th. Bet. Grape + Fir	+3.4 MV	-0.6 MV	south	+1.2 MV	" "	1.00 PM.	" " " " " No. 1930 + 1934.
30th. Bet. Fir + ELM	+0.8 MV	+0.3 MV	south	+0.54 MV	" "	2.00 PM	" " " " " No. 1831 + 1835
30th. Bet. Elm + Date	+0.9 MV	+0.3 MV	south	+0.53 MV	" "	2.45 PM	" " " " " No. 1705 + 1715.
30th Bet Date + Cedar	+2.0 MV	+0.5 MV	south	+1.15 MV	" "	3.45 PM	" " " " " No 1611 + 1621
30th Bet. Cedar + Beech	+1.2 MV	+0.5 MV	south	+0.83 MV	" "	4.40 PM	" " " " " No 1527 + 1537

Measurement Made at		10 sec. Reading for 2 Minutes. Maxi.	Minu.	Direction of current	Average Reading
Fern. Bet.	Hawthorn + Ivy.	+3.8 MV	+1.2 MV	South	+2.75 MV
Fern Bet.	Hawthorn + Grape	+4.8 MV	+1.4 MV	South	+2.78 MV
Fern Bet.	Grape + Fir.	+1.0 MV	+0.1 MV	South	+0.38 MV
Fern Bet.	Fir + Elm	+1.4 MV	+0.4 MV	South	+0.79 MV
Fern Bet.	Date + cedar	+2.0 MV	-0.3 MV	South	+1.03 MV
Fern Bet.	Cedar + Beech	+3.0 MV	+0.4 MV	South	+1.52 MV
5th st. Bet. E + F		-1.4 MV	-0.1 MV	South	-0.65 MV
5th. st. Bet. E + F		+2.0 MV	-0.4 MV	North	+0.68 MV

Investagations of Service Trouble at C st bet. 14th. + 15th.

service for Nos. 1440, 1442	+0.4 V	from pipe to ground.	July 24.
" " No. 1420	+0.6 V	from pipe to ground.	" "

Date	Time	Notes.
July 9th.	8.00 AM.	Meters for Houses No. 2135 + 2145
" "	9.20 AM	" " " " 3904 + 2021
" "	1.00 PM	" " " " 1927 + 1935
" "	2.00 PM	" " " " 1829 + 1823
" "	2.35 PM.	" " " " 1605 + 1611.
" "	3.20 PM	" " " " 1521 + 1527
July 12	9.00 AM	Dis. Bet. services = 3 Ft. 8½ in. Location = 22 Ft. south of south cor. of E st.
" 13.	9.30 AM	Dis. Bet. services = 30 Ft. 6 in. Location = 95 Ft. south of south cor. of E st

Measurement Made at	Rail Joint	Feet of Rail	Date	Time
30th & University	+0.2 MV	+0.1 MV	July 10.	8.15 AM.
2	+0.2 MV	+0.1 MV		
3	−200.0 MV	+0.0 MV		
4	+0.2 MV	+0.1 MV		
5	+0.1 MV	+0.1 MV		
6	+0.0	+0.0		
7	+0.1 MV	+0.05 MV		
8	+0.0	+0.0		
9	+0.1 MV	+0.05 MV		
10	+0.4 MV	+0.1 MV		
11	−0.7 MV	+0.2 MV		
12	0.0	0.0		
13	0.0	0.0		
30th & Wightman	0.0	0.0		
2	0.0	0.0		
3	0.0	0.0		
4	0.0	0.0		
5	0.0	0.0		
6	0.0	0.0		
7	0.0	0.0		
8	0.0	0.0		
9	0.0	0.0		
10	0.0	0.0		
11	0.0	0.0		
12	0.0	0.0		

Notes

(East Rail on Northbound Track.) First Joint S of corner

Bad Joint.

First Joint south of the corner.

Measurement Made at		Rail Joint	3 Feet Rail	Date	Time
30th + Wightman		+0.1 MV	+0.05 MV	July 10	10.5 AM
30th + Gunn	1.	+0.6 MV	+0.1 MV		
	2.	+0.0 MV	+0.0 MV		
	3	+0.0 MV	+0.0 MV		
	4	+0.0 M	+0.0		
	5	+0.0	+0.0		
	6	+0.0 MV	+0.0		
	7	+0.0	0.0		
	8	0.6 MV	0.2 MV		
	9	-10.0 MV	-1.4 MV		
	10	0.0	0.0		
	11	+2.0 MV	+0.6 MV		
30th + Landis	1	+0.4 MV	+0.2 MV		
	2	+0.0	0.0		
	3	+0.3 MV	+0.0 MV		
	4	+1.0 MV	+0.4 MV		
	5	+0.8 MV	+0.4 MV		
	6	+0.6 MV	+0.3 MV		
	7	+2.0 MV	+0.6 MV		
	8	+0.5 MV	+0.4 MV		
	9	+0.4 MV	+0.2 MV		
	10	+0.0 MV	+0.0 MV		
30th + Wright st.	1	+3.0 MV	+0.6 MV		
	2	+0.4 MV	+0.2 MV		
	3	+0.0 MV	+0.0 MV		

Notes

First Joint south of corner

First Joint south of corner

First Joint south of corner

Measurement made at		Rail Joint	3 Feet Rail	Date	Time
30th + Wight st.	4	+3.0 MV	+0.0 MV	July 10	11.15 AM.
	5	+0.8 MV	+0.2 MV		
	6	+0.0 MV	+0.0 MV		
	8	+0.0	+0.0		
	9	+0.0	+0.0		
	10	+0.4 MV	+0.2 MV		
	11	+2.0 MV	+0.7 MV		
	12	+6.8 MV	+0.2 MV		1.00 AM.
30th + Capps.	1.	+0.4 MV	+0.8 MV		
	2.	0.0	0.0		
	3.	+0.4 MV	+0.3 MV		
	4.	0.0	0.0		
	5.	+0.8 MV	+0.3 MV		
	6.	+0.6 MV	+0.3 MV		
	7.	+0.7 MV	+0.4 MV		
	8	+0.9 MV	+0.2 MV		
	9	+6.6 MV	+0.3 MV		
	10	+5.0 MV	+0.4 MV		
	11	+0.5 MV	+0.4 MV		
30th + Myrtle	1.	+3.0 MV	+1.6 MV		
	2.	+0.6 MV	+0.4 MV		
	3.	+1.2 MV	+0.4 MV		
	4.	+0.8 MV	+0.4 MV		
	5	+0.6 MV	+0.3 MV		
	6	+1.0 MV	+0.6 MV		

Notes.

First Joint South of corner

First Joint south of corner

Measurement Made at	Rail Joint	3 Feet Rail	Date	Time	Notes
30th + Myrtle	7 +1.40 MV	+1.0 MV			
	8 +0.8 MV	+0.4 MV			
	9 +0.8 MV	+0.3 MV			
	10 +1.4 MV	+0.6 MV			
Upas + 30th	1. +0.6 MV	+0.3 MV			First Joint on curve, West of corner
	2. +0.2 MV	+0.1 MV			
	3. +0.4 MV	+0.2 MV			
	4. +0.2 MV	+0.1 MV.			
	5. +1.4 MV	+1.0 MV			
	6. +2.0 MV	+1.0 MV			
	7. +0.5 MV	+0.2 MV			
30th + Upas	1. +0.7 MV	+0.3 MV			First Joint on curve, South of corner
	2. +0.4 MV	+0.2 MV		2.00 PM	
	3. -0.5 MV	+0.2 MV			
	4 +0.6 MV	+0.2 MV			
	5 +2.0 MV	+0.6 MV			
	6 +1.4 MV	+0.6 MV			
	7 +0.8 MV	+0.2 MV			
	8 +1.0 MV	+0.2 MV			
	9 +0.4 MV	+0.2 MV			
	10 +0.7 MV	+0.3 MV			
	11 +1.2 MV	+0.8 MV			
	12 +10.0 MV	+0.2 MV			
	13 +0.8 MV	+0.4 MV			
	14 +3.0 MV	+0.3 MV			

Measurement Made at.	Rail Joint	3 Feet Rail	Date	Time
30th + Upas cont. 15	+0.4 MV	+0.2 MV	July 10	2.30 AM
16	+0.8 MV	+0.4 MV		
17	+3.0 MV	+1.2 MV		
18	+1.2 MV	+0.4 MV		
19	+0.8 MV	+0.4 MV		
20	+1.0 MV	+0.4 MV		
30th. + Thorne 1	+0.6 MV	+0.2 MV		
2	+0.8 MV	+0.3 MV		
3	+0.6 MV	+0.2 MV		
4	+0.4 MV	+0.2 MV		
5	+0.8 MV	+0.4 MV		
6	+0.4 MV	+0.3 MV		
7	+0.8 MV	+0.4 MV		
8	+0.6 MV	+0.4 MV		
9	+2.0 MV	+0.8 MV		
10	+0.8 MV	+0.2 MV		
11	+2.4 MV	+0.8 MV		
12	+2.2 MV	+1.6 MV		
13	+10.0 MV	+1.0 MV		
14	+0.6 MV	+0.3 MV		
15	+1.0 MV	+0.4 MV		
16	+12.0 MV	+1.0 MV		
17	+0.4 MV	+0.2 MV		
18	+0.8 MV	+0.4 MV		
19	+0.8 MV	+0.2 MV		

Notes.

Measurement Made at		Rail Joint	3 Feet Rail	Date	Time
30th + Thorne.	20 Cont	− 47.0MV	− 1.0MV	July 10.	3:30 PM.
30th + Redwood	1	+ 15.0MV	+ 1.0MV	" "	
	2	+ 3.6MV	+ 0.1MV		
	3	+ 0.4MV	+ 0.2MV		
	4	+ 0.6MV	+ 0.3MV		
	5	+ 0.8MV	+ 0.3MV		
	6	+ 1.2MV	+ 0.4MV		
	7	+ 0.8MV	+ 0.3MV		
	8	+ 0.8MV	+ 0.4MV		
	9	+ 1.2MV	+ 0.8MV		
	10	+ 0.6MV	+ 0.2MV		
30th + Quince	1.	+ 1.2MV	+ 0.6MV		
	2	+ 0.7MV	+ 0.3MV		
	3	+ 0.8MV	+ 0.4MV		
	4	+ 1.2MV	+ 0.6MV		
	5	+ 0.7MV	+ 0.6MV		
	6	+ 0.8MV	+ 0.3MV		
	7	+ 1.0MV	+ 0.6MV		
	8	+ 1.6MV	+ 0.7MV		
	9	+ 9.0MV	+ 1.0MV		
	10	+ 0.8MV	+ 0.6MV		
	11	+ 0.7MV	+ 0.5MV		
30th + Palm st.	1.	+ 1.2MV	+ 0.6MV		
	2.	+ 0.2MV	+ 0.1MV	July 11	8.00AM
	3	+ 0.1MV	+ 0.1MV		

Notes

First Joint South of corner.

First Joint South of the corner

Measurement Made	st.	Rail Joint	3 Feet of Rail	Date	Time
30th + Palm st. (cont)	4.	+0.8 MV	+0.4 MV	July 11	8.15 AM
	5	+0.8 MV	+0.3 MV		
	6	+1.2 MV	+0.4 MV		
	7	+0.4 MV	+0.2 MV		
	8	+2.0 MV	+1.0 MV		
	9	+0.9 MV	+0.4 MV		
	10	+0.8 MV	+0.5 MV		
Olive + 30th.	11	+0.7 MV	+0.3 MV		
	2	+0.6 MV	+0.2 MV		
	3	-1.2 MV	+0.6 MV		
On Bridge	1.	+120.0 MV	+0.6 MV		
	2.	+0.8 MV	+0.2 MV		
	3.	+2.6 MV	+0.8 MV		
	4	-5.0 MV	-0.4 MV		
	5	+12.0 MV	+0.2 MV		
	6	+45.0 MV	+0.1 MV		
	7	+0.5 MV	+0.2 MV		
	8	+50.0 MV	+0.2 MV		
	9	+2.0 MV	+0.3 MV		
	10	+50.0 MV	+0.2 MV		
	11	+12.0 MV	+4.0 MV		
	12	+400.0 MV	+0.4 MV		
	13	+0.8 MV	+0.4 MV		
	14	+0.7 MV	+0.3 MV		
	15	+0.0 MV	+0.4 MV		

Notes.

First Joint south of the corner.

Measurement Made	at	Rail joint	3 Feet of Rail	Date	Time
On Bride	(cont.) 16	+0.8 MV	+0.3 MV		
	17	+5.40 MV	+0.1 MV		
	18	+3.60 MV	+0.4 MV		
	19	+14.0 MV	+0.8 MV		
	20	+0.8 MV	+0.3 MV		
Bridge + 30th	1.	+0.7 MV	+0.3 MV.		
	2.	+200.0 MV	+0.4 MV		
	3.	+0.6 MV	+0.2 MV		
	4.	+0.8 MV	+0.2 MV		
	5.	+0.6 MV	+0.2 MV		
	6.	+1.0 MV	+0.3 MV		
	7.	+0.6 MV	+0.2 MV		

Notes.

First Joint south of south End of Bridge

Measurement Made at	From Pipe to R Maxi.	Minu.	Average Reading	Time	Date	5 minute Reading	Notes.
5th st. Bet. A+B	-6.4V	-2.6V	-4.4V	8.30 AM	July 14		Made from Meter for No. 1227.
5th st. Bet. B+C	-2.2V	-0.8V	-1.48V	9.30 "	" "		" " " " " " 1241 Grand Theater
5th st. Bet C+D	-2.2V	-0.7V	-1.23V	10.00 "	" "		" " " " " " 1241 Benbough's Billiards
5th st. Bet D+E	-2.8V	-0.6V	-1.45V	10.30 "	" "		" " Hyd in Front No. 933.
5th st. Bet. H+I	-3.0V	-0.6V	-1.16V	2.30 PM.	" "		Hyd, Front of No. 537.
5th st. Bet. I+J	-2.0V	-0.8V	-1.57V	3.15 "	" "		Meter Box Front of No. 437.
5th st. Bet. J+K	-3.0V	-0.8V	-1.53V	4.00 "	" "		" " " " " 321.
5th st. Bet K+L	-0.6V	-0.2V	-0.43V	4.15 "	" "		" " 130 ft. South of Corner. Mst.
5th st. Bet A+Ash.	-4.4V	-1.6V	-2.88V	9.30 AM.	July 16.		Meter Front of No. 1351. Direction of C. From R. to P.
5th st. Bet. Ash+Beech	-5.6V	-1.6V	-3.46V	10.00 AM	" "		" " " " " No. Masonic Temple. " " " " " " "
5th st. Bet. Beech+Cedar	-4.8V	-1.0V	-2.95V	10.20 AM.	" "		" " " " " " 1539 " " " " " " "
30th. Bet. Vnl. + Wightman	-9.4V	-2.4V	-4.6V	8.30 AM.	July 17.		Meter for No. 3834. Dir. From R to P.
30th. Bet. Wightman + Gunn	-4.4V	-1.8V	-3.76V	9.30 "	" "		" " " " " 3794 " " " " " "
30th. Bet. Gunn + Landis	-6.4V	-1.8V	-3.64V		" "		" " " " " 3730 " " " " " "
30th. Bet. Landis + Wight	-5.0V	-1.2V	-2.96V		" "		" " " " " 3620 " " " " " "
30th. Bet. Wight + Capps	-5.0V	-1.0V	-2.89V		" "		" " " " " 3570 " " " " " "
30th. Bet. Capps + Myrtle	-5.4V	-1.4V	-2.89V		" "		" " " " " 3528 " " " " " "
30th. Bet. Myrtle + Opas	-6.0V	-1.8V	-2.9V		" "		" " " " " 3435 " " " " " "
Opas. Bet. Ray + 30th	-5.0V	-1.6V	-3.18V		" "		" " " " " 3716 " " " " " "
30th. Bet. Opas + Thorn.	-6.0V	-1.0V	-3.38V		" "		" " " " " 3175 " " " " " "
30th. Bet. Thorn + Redwood	-8.0V	-1.2V	-4.17V		" "		" " " " " 3227 " " " " " "

Measurement Made at	Maxi.	Mini.	Average Reading	Direction of current
Ast. Bet 4th + 5th.	−3.8 mv	−0.8 mv	−1.91 mv	West.
5th. st. Bet. Cedar + Beech st.	+1.4 mv	+0.4 mv	+0.71 mv	South
5th. st. Bet. Ash + Beech	+3.0 mv	+0.8 mv	+1.93 mv	"
5th. st. Bet. Ash + Ast.	+8.6 mv	+1.8 mv	+3.22 mv	"
5th. st. Bet. Ast + B	+20.0 mv	+12.0 mv	+17.33 mv	"
Adams Bet. Boundary + 32 st.				

Date	Time	Notes.
July 16.	11.30 A.M.	connection made across st.
" "	2.00 P.M.	Meters by Agnew Sanitarium.
" "	3.30 P.M.	" For Nos. 1437.
" "	4.10 P.M.	" " " 1345 + 1351.
" "	4.35 P.M.	" " " 1228 + 1245.

Measurement Made at	From Pipe to R Maxi.	Minu.	Average Reading	Time	Date	Notes
30th. Bet. Redwood + Quince	-6.0 MV	-2.0 V	-3.68 MV	2.30 PM	July 17	Meter for No. 3036.
30th. Bet. Quince + Palm	-5.2 MV	-1.8 V	-3.48 MV	3.00 PM	" "	" " " 2938
30th. Bet. Palm + Bridge	-8.0 MV	-2.0 V	-4.4 MV	3.30 PM	" "	Hyd. on corner.
30th. + South End of Bridge	-10.0 MV	-4.6 V	-7.32 MV	4.00 PM	" "	Connection made at standpipe.
30th Bet. Laurel + Kalmia	-7.6 V	-2.0 V	-4.1 V	9.00 AM	July 18	Meter For No. 2470
30th Bet. Kalmia + Juniper	-9.4 V	-1.6 V	-4.14 V	9.30 "	" "	" " " 2344
30th Bet. Juniper + Ivy	-8.2 V	-1.6 V	-4.41 V	10.00 "	" "	" " " Back Garage.
30th Bet. Hawthorn + Ivy	-6.0 V	-1.5 V	-3.14 V	11.00 "	" "	" " " 2122
30th Bet. Grape + Hawthorn	-7.5 V	-1.6 V	-3.94 V	12.00 "	" "	" " " 2034
30th Bet. Grape + Fir	-10.0 V	-1.2 V	-5.15 V	8.00 AM	July 20	" " " 1934
30th. Bet. Fir + Elm.	-10.0 V	-1.4 V	-5.23 V	9.00 "	" "	" " " 1835
30th. Bet. Elm + Date	-8.4 V	-2.0 V	-4.33 V	10.00 "	" "	" " " 1715
30th Bet. Date + Cedar	-10.0 V	-1.6 V	-4.19 V	11.00 "	" "	" " " 1611.
30th. Bet. Cedar + Beech	-8.0 V	-1.0 V	-4.07 V	12.00 "	" "	" " " 1527.
28th. Bet. A + Ash	-7.4 V	-0.8 V	-3.96 V	1.00 PM	" "	" " " 1321
28th. Bet. 28 + Bst.	-6.2 V	-1.0 V	-3.43 V	2.00 "	" "	" " " 2795 Bst.
B.st. Bet. 27 + 28	-8.6 V	-1.8 V	-5.06 V	3.00 "	" "	" " " 2728 "
B.st. Bet. 26 + 27	-8.4 V	-1.8 V	-5.03 V	4.00 "	" "	" " " 2643 "
Bst. Bet. 25 + 26	-8.0 V	-1.4 V	-4.87 V	4.45 "	" "	" " " 2559 "
National Bet. 31 + 30	-20.0 V	-2.0 V	-7.11 V	8.00 AM	July 21	" " " 3077
National Bet. 30 + 29	-14.0 V	-1.0 V	-5.2 V	9.00 "	" "	" " " 2959
National Bet. 29 + 28	-14.0 V	-1.0 V	-5.57 V	10.00 "	" "	" " " 2812
National Bet. 27 + 28	-12.0 V	-2.0 V	-5.75 V	11.00 "	" "	" " " 2769
National Bet. 26 + 27	-14.0 V	-2.0 V	-6.17 V	12.00 "	" "	

Measurement Made at	From Pipe to R Maxi.	Minu.	Average Reading	Time	Date	Notes.
26st. Bet. Logan + National	-11.0 V	-1.0 V	4.6 V	1.00 PM	July 21.	Meter For No. 912. 26. st.
Logan Bet. 26th + Samson	-18.0 V	-1.0 V	5.63 V	1.30 "	" "	" " " 2235, Logan.
Logan Bet. Samson + Eakens	-10.0 V	-1.0 V	4.38 V	2.15 "	" "	" " " 2157.
Logan Bet. Dewey + Evans	-15.0 V	-2.5 V	6.78 V	3.00 "	" "	" " " 2045.
Logan Bet. Dewey + Crosby	-13.0 V	-1.5 V	6.67 V	4.00 "	" "	" " " 1950.
Logan Bet. Crosby + Beardsly	-11.0 V	-1.5 V	4.77 V	4.45 "	" "	" " " 1849.
Logan Bet. Beardsly + Sigsbee.	-7.0 V	-2.5 V	4.83 V		July 22	" " " 1749.
Logan Bet. 16th + Sigsbee	-8.0 V.	-2.0 V	3.92 V		" "	" " " 1649.
16th. Bet. Logan + M st.	-4.2 V	-1.4 V	2.59 V		" "	" " " 33.
16th. Bet. M + L st.	-3.6 V	-1.4 V	2.58 V		" "	" " " 118.
16th. Bet. K + L st.	-4.0 V	-1.6 V	2.76 V		" "	" " " 241.
16th. Bet. J + K st.	-4.0 V	-0.8 V	2.39 V		" "	" " " 355.
16th. Bet. I + J st.	-5.2 V	-1.6 V	2.89 V		" "	" " " 431.
16th. Bet. H + I st.	-5.8 V	-1.4 V	2.79 V		" "	" " " 531.
F st + 16th st.	-7.0 V	-1.0 V	2.8 V	4.00 PM	" "	Meter Chamber. F st.
F st Bet. 14th + 15th.	-7.0 V	-0.8 V	2.55 V	4.45 "	" "	Meter For No. 1453.
F st. Bet. 13th + 14th.	-10.0 V	-0.3 V	1.93 V	8.00 AM	July 23	" " " 1315.
F st. Bet. 12th + 13th.	-10.0 V	-0.4 V	1.1 V.	9.00 "	" "	" " " 2137. 13th. st.
F st. Bet. 11th + 12th.	-13.0 V	-2.0 V	3.21 V	10.00 "	" "	" " " 1120. F st.
F st. Bet. 10th + 11th.	-7.0 V	-0.4 V	3.14 V	11.30 "	" "	" " " 1015
F st + 9th st.	-8.0 V	-0.4 V	2.64 V	12. "	" "	connection made at Hyd.
F st. + 8th st.	-6.0 V	-0.5 V	2.97 V	1. PM	" "	" " " Hyd.
F st. + 7th st	-2.8 V	-0.6 V	1.39 V	2.00 "	" "	" " " Hyd.
F st. Bet. 6 + 7 st.	-3.3 V	-1.0 V	1.49 V	3.30 "	" "	Meter For No. 617

Measurement Made	at.	From Pipe to Rail Maxi	Minu.	Average Reading	Time	Date	Notes.
Adams. Bet.	Boundary + 32nd st.	-12.0V	-0.6V	-3.32V	1.00 P.M.	July 24	
" Bet.	Boundary + Ohio	-9.0V	-1.4V	-4.61V	1.45 " "	" "	Meter for No. 3820.
" Bet.	Ohio + Nebraska	-6.2V	-0.8V	-3.89V	2.15 " "	" "	" " " 3019.
" Bet.	Kansas + Nebraska	-10.0V	-0.6V	-4.31V	3.00 " "	" "	" " " 2428.
" Bet.	Kansas + Utah	-7.8V	-0.6V	-4.18V	4.00 " "	" "	" " " 2868.
" Bet.	Utah + Idaho	-7.6V	-1.4V	-4.37V	4.40 " "	" "	" " " 2721.
" Bet.	Oregon + Hamilton	-10.0V	-1.0V	-4.44V	8.00 AM	July 25	" " " 2625
" Bet.	Arisona + Texas Bld.	-10.0V	-1.4V	-4.79V	8.45 " "	" "	" West of corner.
" Bet.	Texas Bld. + Louisiana	-7.0V	-1.2V	-3.72V	9.15 " "	" "	" for No 2320
" Bet.	Louisiana + Mississippi	-8.4V	-1.2V	-3.81V	10.00 " "	" "	" " " 2872.
" Bet.	Mississippi + Alabama	-5.6V	-0.8V	-3.05V	11.00 " "	" "	First " East of cor. North side st.
" Bet.	Alabama + Florida	-2.6V	-0.4V	-1.5V	12.00 " "	" "	Meter for No. 2627.
" Bet.	Florida + Georgia	-2.2V	-0.8V	-1.26V	8.00 AM	July 27	" " " 2515.
" Bet.	Georgia + Pk. Blvd.	-3.4V	-0.5V	-1.63V	9.00 " "	" "	" " " 2445.
Pk. Blvd. Bet.	Adams + Madisn.	-8.0V	-2.0V	-4.16V	9.45 " "	" "	" " " 2403.
" " Bet.	Madison + Monroe	-8.6V	-1.4V	-4.34V	10.15 " "	" "	" " " 4511.
" " Bet.	Monroe + Mead	-8.0V	-1.4V	-3.82V	11.00 " "	" "	" " " 4445.
" " Bet.	Mead + El Cajon	-10.0V	-3.5V	-6.55V	12.00 " "	" "	" " " 4337
Inter. Pk.	Blvd + Uni. Blvd	-10.0V	-2.0V	-4.93V	1.00 P.M.	" "	" " Normal school
Uni. Blvd. Bet.	Pk. Blvd + Campus	-14.0V	-2.0V	-6.75V	2.00 " "	" "	" " No. 4141
Uni. Blvd. Bet.	Campus + Lincoln	-12.0V	-4.0V	-7.83V	3.30 " "	" "	" " " 4075
Uni. Blvd. Bet.	Lincoln + Blane	-11.0V	-4.0V	-7.23V	8.00 AM	July 28	" " " 3427.
Uni. Blvd. Bet.	Blane + Uni. Ave.	-7.0V	-2.0V	-4.23V	9.00 " "	" "	" " " 3857.
Uni. Ave. Bet.	Uni. Blvd + Richmond	-7.0V	-2.0V	-4.18V	9.55 " "	" "	" " " 1419.
Uni. Ave. Bet.	Richmond + Vermont	-7.0V	-2.2V	-4.0V	10.45 " "	" "	" " "

Measurement Made at	From P. to Rail Maxi.	Mino.	Average Reading	Time	Date	Notes
Uni. Ave. Bet. Vermont + 10th	-7.6 V	-3.2 V	-5.25 V	11.00 A.M.	July 28	Meter For No. 1943
" " Bet. 9th + 10th	-8.6 V	-2.0 V	-4.73 V	12.00 " "	" "	" " " 928
" " Bet. 8th + 9th	-7.4 V	-2.0 V	-4.81 V	1.00 PM	" "	" " " 830
" " Bet. 7th + 8th	-9.0 V	-1.6 V	-4.99 V	2.00 " "	" "	" " " 1647
" " Bet. 7th + 6th	-6.0 V	-2.4 V	-3.93 V	3.00 " "	" "	" " Telephone Station.
" " Bet. 5th + 6th	-6.7 V	-2.4 V	-4.61 V	4.15 " "	" "	" " No. 514.
6th. Bet. Uni. Ave. + Robinson	-9.0 V	-4.4 V	-6.79 V	4.45 " "	" "	" " " 3846
" " Robinson + Evans Place	-8.0 V	-2.4 V	-5.45 V	8.00 A.M.	July 29	" " " 3775
" " Evans Place + Penn. Ave	-9.0 V	-2.2 V	-5.1 V	9.00 " "	" "	" " " 3717.
" " Penn Ave. + Anderson	-7.4 V	-2.2 V	-4.23 V	10.00 " "	" "	" " " 3669.
" " Anderson + Brooks	-7.2 V	-1.0 V	-4.45 V	11.00 " "	" "	" " " 3628.
" " Brooks + Walnut	-7.6 V	-1.0 V	-4.36 V	12.00 " "	" "	" " " 3580.
" " Walnut + Upas	-8.0 V	-2.4 V	-4.74 V	1.00 PM	" "	" " " 3418.
" " Upas + Thorn	-7.8 V	-1.6 V	-4.82 V	2.00 " "	" "	" " " 3331.
" " Thorn + Spruce	-7.2 V	-2.6 V	-4.81 V	2.40 " "	" "	" " " 3227.
" " Spruce + Redwood	-8.2 V	-2.4 V	-4.61 V	3.20 " "	" "	" " " 3115
" " Redwood + Quince	-8.0 V	-2.2 V	-4.68 V	4.30 " "	" "	" " " 3033
" " Quince + Palm	-6.2 V	-2.2 V	-4.33 V	5.00 " "	" "	" " " 2933.
" " Palm + Olive	-9.6 V	-5.0 V	-7.27 V	8.00 A.M.	July 30	" " " 2845.
" " Olive + Nutmeg	-7.8 V	-2.6 V	-4.59 V	8.45 A.M.	" "	" " " 2744.
" " Maple + Nutmeg	-7.0 V	-2.0 V	-4.23 V	9.15 " "	" "	" " " 2639
" " Maple + Laurel	-6.8 V	-1.6 V	-3.87 V.	10.00 " "	" "	" " " 2527
" " Laurel + Kalmia	-7.2 V	-2.0 V	-4.23 V	10.50 " "	" "	" " " 2427.
" " Kalmia + Juniper	-7.2 V	-2.0 V	-4.4 V	11.40 " "	" "	" " Vacant Lot.
" " Juniper + Ivy	-7.0 V	-2.0 V	-4.63 V	12.00 " "	" "	Mid. Block East Side of St.

Measurements Made at	From P to Rail Maxi.	Minu	Average Reading	Time	Date	Notes
5th. Bet. Hawthorn Ivy +	-6.0 v	-2.0 v	-4.01 v	1.00 P.M.	July 30	1st. Meter North of Cor. on East side
" " Hawthorn Grape +	-8.0 v	-2.2 v	-3.78 V	2.00 " "	" "	Meter for House No. 2001.
" " Fir Grape +	-5.0 v	-1.0 v	-3.28 V	2.45 " "	" "	" " " " 1942
" " Fir Elm +	-4.8 v	-2.2 v	-3.52 V	3.30 " "	" "	" " " "
" " Elm Date +	-7.0 v	-3.6 v	-5.26 v	4.00 " "	" "	" " " " 1740.
" " Date Cedar +	-8.0 v	-4.2 v	-5.63 v	4.45 " "	" "	
Uni. Ave Bet. Boundary Missouri +	-6.0 v	-1.3 v	-3.21 v	9.00 AM	July 31.	" " " " 3228
" " " Iowa Illonis +	-8.0 v	-1.4 v	-3.72 v	9.25 " "	" "	connection made to Hyd.
" " Illonis Ohio +	-4.0 v	-1.8 v	-2.86 v	10.15 " "	" "	Meter vacant Lot Mid. Block.
" " at Ray	-4.6 v	-1.0 v	-2.89 v	10.45 " "	" "	connection made to Hyd.
" " Bet. 30th + Kansas	-4.8 v	-1.4 v	-2.87 v	11.20 " "	" "	Meter for 2834
" " Bet. Utah Kansas +	-5.6 v	-1.4 v	-3.35 v	11.50 " "	" "	Meter for No. 2828.
" " Bet. Utah Idaho +	-6.0 v	-1.8 v	-3.62 v	12.10 " "	" "	" " " 2828.
" " Bet. Idaho Oregon +	-3.6 v	-1.2 v	-2.43 v	1.00 PM	" "	connected to stand pipe North side Mid. Block.
" " Bet. Oregon Arisona +	-6.0 v	-1.0 v	-3.6 v	1.35 " "	" "	Meter for No. (3211).
" " at Arisona	-5.20 v	-1.4 v	-2.88 v	2.05 " "	" "	connected to Hyd.
" " Bet. Texas Louisana +	-5.3 v	-1.0 v	-2.69 v	2.40 " "	" "	" " Hyd.
" " at Missippi	-6.2 v	-1.0 v	-3.46 v	3.10 " "	" "	" " Hyd.
" " at Alabama	-6.2 v	-1.6 v	-3.33 v	3.50 " "	" "	" " Hyd.
" " at Florida	-5.0 v	-1.8 v	-3.14 v	4.20 " "	" "	" " Hyd.
" " Bet. Park Blvd center +	-10.0 v	-2.2 v	-5.72 v	4.50 " "	" "	" " Meter
" " Bet. center Uni. Blvd. +	-10.0 v	-3.0 v	-6.45	5.20 " "	" "	" " Meter

Phis & Univ Pt. R. + 6'.
Pt. E. + .2' + .18

India St. Service Pipe at Main to G. −0.10'
Service Pipe at Curb to G. −2'

Table IV.—Minutes in Decimals of a Degree.

′	.0167	11′	.1833	21′	.3500	31′	.5167	41′	.6833	51′	.8500
	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

Table V.—Inches in Decimals of a Foot.

16	3-32	⅛	3-16	¼	5-16	⅜	½	⅝	¾	⅞
52	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729

1	2	3	4	5	6	7	8	9	10	11
33	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

Table VI.—Radii, Ordinates and Deflections.

Deg.	Radius	Mid Ord	Tan Def.	Chd. Def.	Def for 1 Foot	Deg.	Radius	Mid Ord.	Tan Def.	Chd Def.	Def. for 1 Foot
10′	34377.	.036	.145	.291	0.05′	7°	819.0	1.528	6.105	12.21	2.10′
20	17189.	.073	.291	.582	0.10	20′	781.8	1.600	6.395	12.79	2.20
30	11459.	.109	.436	.873	0.15	30	764.5	1.637	6.540	13.08	2.25
40	8594.4	.145	.582	1.164	0.20	40	747.9	1.673	6.685	13.37	2.30
50	6875.5	.182	.727	1.454	0.25	8	716.8	1.746	6.976	13.95	2.40
	5729.6	.218	.873	1.745	0.30	20	688.2	1.819	7.266	14.53	2.50
10	4911.2	.255	1.018	2.036	0.35	30	674.7	1 855	7.411	14.82	2.55
20	4297 3	.291	1.164	2.327	0.40	40	661.7	1.892	7.556	15.11	2.60
30	3819.8	.327	1.309	2.618	0.45	9	637.3	1.965	7.846	15.69	2.70
40	3437.9	.364	1.454	2.909	0.50	20	614.6	2 037	8.136	16 27	2.80
50	3125 4	.400	1.600	3.200	0.55	30	603.8	2.074	8.281	16.56	2.85
	2864 9	.436	1.745	3.490	0.60	40	593.4	2.110	8.426	16 85	2.90
10	2644.6	.473	1.891	3.781	0.65	10	573.7	2.183	8.716	17.43	3.00
20	2455.7	.509	2.036	4.072	0.70	30	546.4	2.292	9.150	18.30	3.15
30	2292.0	.545	2.181	4.363	0.75	11	521.7	2.402	9.585	19.16	3.30
40	2148.8	.582	2.327	4.654	0.80	30	499.1	2 511	10.02	20.04	3.45
50	2022.4	.618	2.472	4.945	0.85	12	478.3	2.620	10.45	20.91	3.60
	1910.1	.655	2.618	5.235	0.90	30	459 3	2.730	10.89	21 77	3.75
10	1809.6	.691	2.763	5.526	0.95	13	441.7	2 839	11.32	22.64	3.90
20	1719.1	.727	2.908	5.817	1.00	30	425.4	2.949	11.75	23.51	4.05
30	1637.3	.764	3.054	6.108	1.05	14	410 3	3.058	12.18	24 37	4.20
40	1562.9	.800	3.199	6.398	1.10	30	396 2	3.168	12.62	25.24	4.35
50	1495.0	.836	3.345	6.689	1.15	15	383.1	3.277	13.05	26.11	4.50
	1432.7	.873	3.490	6.980	1.20	30	370 8	3.387	13.49	26.97	4.65
10	1375.4	.909	3 635	7.271	1.25	16	359.3	3.496	13.92	27 84	4.80
20	1322.5	.945	3.718	7.561	1.30	30	348.5	3.606	14 35	28 70	4 95
30	1273.6	.982	3.926	7.852	1.35	17	338 3	3 716	14.78	29.56	5 10
40	1228.1	1.018	4.071	8.143	1.40	18	319 6	3.935	15 64	31.29	5.40
50	1185.8	1.055	4.217	8.433	1.45	19	302.9	4.155	16 51	33.01	5 70
	1146.3	1.091	4 362	8.724	1 50	20	287.9	4.374	17.37	34.73	6 00
10	1109.3	1.127	4.507	9.014	1.55	21	274.4	4.594	18.22	36 44	6 30
20	1074.7	1.164	4.653	9.305	1.60	22	262 0	4.814	19 08	38.16	6.60
30	1042.1	1.200	4.798	9.596	1.65	23	250.8	5 035	19.94	39 87	6 90
40	1011.5	1.237	4.943	9.886	1 70	24	240 5	5.255	20 79	41.58	7.20
50	982.6	1.273	5.088	10.18	1.75	25	231.0	5.476	21 64	43.28	7.50
	955.4	1.309	5.234	10.47	1.80	26	222.3	5.697	22 50	44.99	7.80
10	929.6	1.346	5.379	10.76	1.85	27	214.2	5.918	23.35	46.69	8 10
20	905.1	1.382	5.524	11 05	1 90	28	206 7	6.139	24.19	48.38	8 40
30	881.9	1.418	5.669	11.34	1 95	29	199 7	6.360	25.04	50.07	8.70
40	859.9	1.455	5.814	11.63	2.00	30	193.2	6.583	25.88	51.76	9.00

23" & G. St. | W: -.40 / +1.40 | E: +.40 / +8.40

Length = 3 Feet.
Resistence =
Amp. = .03

$I = \frac{E}{R}$

Time = 10.45

Location = Bet. 611 + 615

+0.8
+0.6
+0.7
+0.6
+0.6
+0.6
+0.5
+0.5
+0.5
+0.8
+0.5
+0.8

12) 7.5 (0.62
72
30
24
6

+1.0
+0.4
+0.4
+0.4
+0.6
+0.7
+0.6
+0.5
+0.6
+0.8
+0.8
+0.8

12) 6.60 (0.55
60

5" St. 49' S/S L.H. - Meas - 45'

+1.0
+1.0
+0.7
+0.8
+0.9
+0.9
+1.0
+0.9
+1.0
+0.8
+0.7
+0.8

12) 10.50 (0.87 MV
96
90
84

Lead service

+ 1.
+ .7
+ .8
+ .3
+ .4
+ 2.1
+ .6
+ .4
+ 1.8
+ 1.2
+ 1.8
1.4
.412
+1.04

+0.4
+0.5
+0.4
+0.4
+0.5
+0.4
+0.5
+0.3
+0.5
+0.3
+0.3
+0.4

12) 5.0 (0.41 MV
48
20

Time = 1.35 PM
Service Near North East corner of 5th + G 3 Ft off Property.

Bet. Cons 3.

Bet. 751 + 745 No. Def.

POTENTIAL SURVEY
of The
San Diego Water System, City of San Diego

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 16 FEET WIDE. SIDE SLOPES 1½ TO 1.

FOR SINGLE TRACK EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	25.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Calculated by F. E. Paradis. C. E.

DISTANCES

R

G.

	0	
0	8.0	
1	9.5	
2	11.0	
3	12.5	
4	14.0	
5	15.5	
6	17.0	
7	18.5	
8	20.0	
9	21.5	
10	23.0	
11	24.5	
12	26.0	
13	27.5	
14	29.0	
15	30.5	
16	32.0	
17	33.5	
18	35.0	
19	36.5	
20	38.0	
21	39.5	
22	41.0	
23	42.5	
24	44.0	
25	45.5	
26	47.0	
27	48.5	
28	50.0	
29	51.5	
30	53.0	
31	54.5	
32	56.0	
33	57.5	
34	59.0	
35	60.5	
36	62.0	
37	63.5	
38	65.0	
39	66.5	
40	68.0	

-4. volts

12. "

+ .13 "

+ .08 "

-10. "

+ .1 "

- 3. "

- .08 "

+ 3. "

- 1. "

- 1.1 "

+ 3. "

POTENTIAL S

of The

San Diego Water System. City of

DISTANCES FROM CENTER OF ROADWAY FOR CRO

ROADWAY 16 FEET WIDE. SIDE SLOPES 1½

FOR SINGLE TRACK EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1
3	12.5	12.7	12 8	13.0	13.1	13.3	13.4	13.6
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1
7	18.5	18.7	18.8	19 0	19.1	19.3	19.4	19.6
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1
9	21 5	21.7	21 8	22.0	22.1	22.3	22.4	22.6
10	23 0	23.2	23 3	23.5	23 6	23 8	23.9	24.1
11	24.5	24 7	24.8	25 0	25.1	25 3	25.4	25.6
12	26.0	25.2	26 3	26.5	26.6	26.8	26.9	27.1
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6
14	29.0	29.2	29 3	29.5	29.6	29.8	29.9	30.1
15	30.5	30 7	30 8	31.0	31 1	31.3	31.4	31 6
16	32 0	32 2	32.3	32.5	32.6	32.8	32.9	33 1
17	33.5	33 7	33.8	34.0	34.1	34 3	34 4	34 6
18	35.0	35.2	35 3	35.5	35 6	35 8	35.9	36 1
19	36.5	36.7	36 8	37.0	37.1	37.3	37.4	37.6
20	38.0	38.2	38.3	38.5	38.6	38 8	38.9	39.1
21	39.5	39.7	39 8	40.0	40 1	40.3	40.4	40.6
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1
23	42.5	42.7	42 8	43 0	43.1	43.3	43.4	43.6
24	44.0	44.2	44 3	44.5	44.6	44.8	44.9	45.1
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6
26	47.0	47.2	47.3	47.5	47.6	47.8	47 9	48.1
27	48 5	48.7	48 8	49.0	49 1	49.3	49.4	49 6
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51 1
29	51.5	51.7	51.8	52.0	52 1	52 3	52 4	52 6
30	53.0	53.2	53 3	53 5	53.6	53.8	53.9	54.1
31	54 5	54.7	54 8	55 0	55.1	55.3	55.4	55.6
32	56.0	56.2	56 3	56.5	56.6	56 8	56.9	57.1
33	57.5	57.7	57.8	58 0	58 1	58 3	58.4	58.6
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1
35	60.5	60.7	60.8	61 0	61.1	61.3	61 4	61.6
36	62.0	62.2	62.3	62.5	62 6	62.8	62 9	63.1
37	63.5	63 7	63 8	64.0	64.1	64.3	64.4	64.6
38	65 0	65.2	65.3	65.5	65.6	65 8	65 9	66 1
39	66 5	66 7	66 8	67.0	67.1	67.3	67.4	67 6
40	68.0	68 2	68.3	68.5	68 6	68.8	68.9	69 1

Calculated by F. E. Paradis. C. E.

M. St. and 37th

Pipe to rail	-4.	volts

National and 32nd St.

Pipe to rail	-12.	"
Pipe to earth	+ .13	"
Pipe to earth(when car pulled)	+ .08	"

19th and 8th

Pipe to rail	-10.	"
Pipe to earth	+ .1	"

Cor. Fort Stocton Dr. and Trias

Pipe to rail	- 3.	"
Pipe to earth	- .08	"

At Power House, Broadway & Arctic

Pipe to rail	+ 3.	"
Pipe to earth	- 1.	"

Arctic and E.

Pipe to earth	- 1.1	"
Pipe to rail	+ 3.	"